

Maintenance Guide

NEC Express Server
Express5800 Series

Express5800/R120h-1M, R120h-2M (3rd-Gen) EXP804, EXP805 (N8100-2834F/2835F/2836F/2837F/ 2838F/2839F)

Chapter 1 Maintenance

Chapter 2 Useful Features

Chapter 3 Appendix

Manuals

Booklets

Safety Precautions and Regulatory Notices	Describes points of caution to ensure the safe use of this server. <u>Read these cautions before using this server.</u>
Getting Started	Describes how to use this server, from unpacking to operations. See this guide first and read the outline of this product.

The electronic edition has been published on a website (<https://www.58support.nec.co.jp/global/download/>).

User's Guide

Chapter 1: General Description	Overviews, names, and functions of the server's parts
Chapter 2: Preparations	Installation of additional options, connection of peripheral devices, and suitable location for this server.
Chapter 3: Setup	System Utility configurations and summary of EXPRESSBUILDER
Chapter 4: Appendix	Specifications and other information

Installation Guide (Windows)

Chapter 1: Installing Windows	Installation of Windows and drivers, and precautions for installation
Chapter 2: Installing Bundled Software	Installation of NEC ESMPRO, and other bundled software

Maintenance Guide

Chapter 1: Maintenance	Server maintenance and troubleshooting
Chapter 2: Useful Features	The details of RAID Configuration Utility
Chapter 3: Appendix	Windows Event Logs

Maintenance Guide (Common)

Chapter 1: Useful Features	The details of System Utility, Starter Pack, and EXPRESSBUILDER
Chapter 2: Appendix	Error messages

Other manuals

The details of NEC ESMPRO, and other features

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Conventions Used in This Document

Signs and symbols for safety

WARNING and CAUTION are used in this guide as the following meaning.



WARNING







Indicates there is a risk of death or serious personal injury



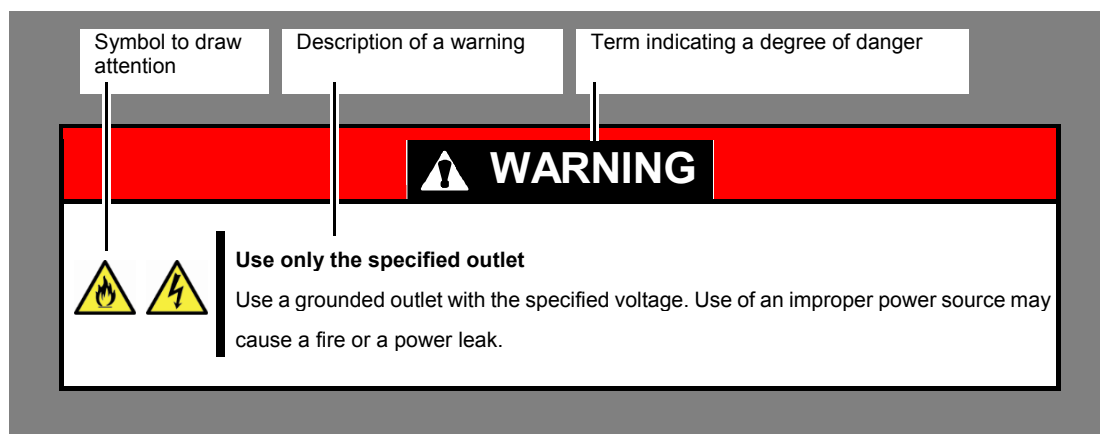
CAUTION

Indicates there is a risk of burns, other personal injury, or property damage

Precautions and notices against hazards are presented with one of the following three symbols. The individual symbols are defined as follows:

	Attention	This symbol indicates the presence of a hazard if the instruction is ignored. An image in the symbol illustrates the hazard type.	(Example)  (Electric shock risk)
	Prohibited Action	This symbol indicates prohibited actions. An image in the symbol illustrates a particular prohibited action.	(Example)  (Do not disassemble)
	Mandatory Action	This symbol indicates mandatory actions. An image in the symbol illustrates a mandatory action to avoid a particular hazard.	(Example)  (Disconnect a plug)

(Example)



Notations used in the text

In addition to safety-related symbols urging caution, three other types of notations are used in this document. These notations have the following meanings.

Important	Indicates critical items that must be followed when handling hardware or operating software. If the procedures described are not followed, <u>hardware failure, data loss, and other serious malfunctions could occur.</u>
Note	Indicates items that must be confirmed when handling hardware or operating software.
Tips	Indicates information that is helpful to keep in mind when using this server.

Optical disk drive

This server is equipped with one of the following drives. These drives are referred to as *optical disk drive* in this document.

- **DVD-ROM drive**
- **DVD Super MULTI drive**

Hard disk drive

Unless otherwise stated, *hard disk drive* described in this document refer to both of the following.

- **Hard disk drive (HDD)**
- **Solid state drive (SSD)**

Abbreviations of Operating Systems (Windows)

Windows Operating Systems are referred to as follows.

See **Chapter 1 (1.2 Supported Windows OS)** in *Installation Guide (Windows)* for detailed information.

Notations in this document	Official names of Windows
Windows Server 2019	Windows Server 2019 Standard
	Windows Server 2019 Datacenter
Windows Server 2016	Windows Server 2016 Standard
	Windows Server 2016 Datacenter
Windows Server 2012 R2	Windows Server 2012 R2 Standard
	Windows Server 2012 R2 Datacenter

Abbreviations of Operating Systems (Linux)

Linux Operating Systems are referred to as follows.

Notations in this document	Official names of Linux
Red Hat Enterprise Linux 7 Server	Red Hat Enterprise Linux 7 Server (x86_64)

Abbreviations of Operating Systems (VMware)

VMware Operating Systems are referred to as follows.

Notations in this document	Official names of VMware
VMware ESXi6.5	VMware ESXi6.5 Update2 or later
VMware ESXi6.7	VMware ESXi6.7 Update2 or later

POST

POST described in this manual refers to the following.

- Power On Self-Test

BMC

BMC described in this manual refers to the following.

- Baseboard Management Controller

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zlib End User License Agreement

zlib License

zlib.h -- interface of the 'zlib' general purpose compression library
version 1.2.2, October 3rd, 2004

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-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

NEC Express5800 Series Express5800/R120h-1M, R120h-2M

1

Maintenance

This chapter explains maintenance of server, and what actions are to be taken in case of trouble when operating this server.

1. Relocation and Storage

Describes how to relocate and store this server.

2. Daily Maintenance

Describes what you confirm for daily use, how to manage files, and how to clean the server.

3. User Support

Describes various services on this product.

4. Collecting Failure Information

Describes how to collect information about the location where a failure occurred and its cause if the server malfunctions. See this section in case of a failure.

5. Troubleshooting

Describes how to identify the causes of problems and what actions are to be taken to address them. See this section if you suspect a failure.

6. Windows System Recovery


Describes Windows recovery setup. See this section if Windows is corrupt.


7. Resetting and Clearing the Server

Describes how to reset or clear the server. See this section if the server is not working or if you want to restore BIOS settings to the factory settings.

1. Relocation and Storage


Follow the steps below if you want to relocate or store this server.


**WARNING**



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see *Safety Precautions and Regulatory Notices*.

- Do not disassemble, repair, or alter the server.
- Do not remove the lithium battery, NiMH, or Li-ion battery.
- Disconnect the power plug before installing or removing the server.

**CAUTION**



Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause burns, injury, and property damage. For details, see *Safety Precautions and Regulatory Notices*.

- Make sure to complete installation.
- Do not get your fingers caught.
- Be careful of handling internal components that may be at high temperatures.

Note

- If the server has hard disk drives, move the server while being careful not to damage the drive.
- When storing the server, monitor the environmental conditions of the storage area.
Temperature: -30°C to 60°C, Humidity: 5% to 95%
(No dew condensation is permitted)

Tips

Make backup copies of important data stored in the hard disk drive.

1. Remove the disc from the optical disk drive.
2. Power off the server (POWER LED goes off).
3. Unplug the power cord of the server from the power outlet.
4. Disconnect all the cables from the server.
5. Pack the server securely to protect from damage, shock, and vibration.

Important

If this server and internal optional devices are suddenly moved from a cold place to a warm place, condensation will occur. Wait for a sufficient period of time before using the server and other components.

Note

Check and adjust the system clock before operating after relocating or storing the server.

2.3 Checking STATUS LED

After powering on the server or before shutting down the system and powering off the server, check STATUS LED on the front of the server. For the functions and descriptions of the LED, see *Chapter 1 (4. Names and Functions of Parts)* in *User's Guide*. If the indicator shows the server abnormality, contact your sales representative.







2.4 Backup

We recommend that you periodically back up the data on HDD.

If a RAID array has been configured on your system, back up the RAID configuration data. We also recommend that you back up it after a rebuilding process required due to HDD failure.

2.5 Cleaning

Regularly clean the server to keep it in good condition.

 WARNING	
    	<p>Be sure to observe the following precautions to use the server safely. Failure to observe the precautions may cause death or serious injury. For details, see <i>Safety Precautions and Regulatory Notices</i>.</p> <ul style="list-style-type: none">• Do not disassemble, repair, or alter the server.• Disconnect the power plug before cleaning the server.

2.5.1 Cleaning the server

Wipe the external surfaces of the server with a dry soft cloth. Follow the steps below if stains remain on the surfaces.

Important

- Do not use thinner and benzene, and other volatile solvents to clean the server.
- The power outlet, cables, connectors on the rear panel of the server, and the inside of the server must be kept dry.

1. Confirm that the power is OFF (POWER LED is OFF).
2. Unplug the power cord of the server from a power outlet.
3. Wipe off dust from the power cord plug with a dry cloth.
4. Soak a soft cloth in neutral detergent that is diluted with cold or lukewarm water, and squeeze it firmly.
5. Rub off stains on the server with the cloth prepared in step 4.
6. Soak a soft cloth in water, squeeze it firmly, and wipe the server with it once again.
7. Wipe the server with a dry cloth.

2.5.2 Cleaning the tape drive

A dirty tape drive head causes unsuccessful file backup and damages the tape cartridge. Periodically clean the tape drive with the designated cleaning tape.

For the cleaning interval and method, the estimated usable period and lifetime of the tape cartridge, refer to the instructions attached to the tape drive.

2.5.3 Cleaning the keyboard and mouse

Wipe the surface of the keyboard with a dry cloth after confirming that the whole system, including the server and the peripherals, are shut down and POWER LED is off.

An optical mouse does not work properly if the lens area is not clean. Wipe the sensor with a dry cloth to remove any dirt or dust.

3. User Support

Before getting after-sales service, check the contents of the warranty and service.

3.1 Maintenance Services

Service representatives from NEC subsidiary companies or companies authorized by NEC provide maintenance services. For the services, contact your sales representative.

3.2 Before Asking for Repair

If you think that a failure occurred, follow the steps below:

1. Check if the power cord and cables to other products are properly connected.
2. See *Chapter 1 (5. Troubleshooting)*. If you find a symptom similar to your problem, take the action as instructed.
3. Confirm that the required software has been properly installed.
4. Scan for viruses using a commercial Antivirus Software.

If the problem persists after taking the measures above, contact your sales representative. Take notes on LED indications and the display on the screen at the failure, which will be useful information for the repair.

For repair within the warranty period, be sure to apply with your warranty.

4. Collecting Failure Information

If the server does not work normally, you can collect failure information by using the following way.
The failure information to be described is to be collected only at the request of your sales representative.

Important

When the system restarts after a failure has occurred, a message may appear indicating virtual memory shortage. Ignore this message and proceed with starting the system. Restarting the system may result in an inability to properly dump the data.

4.1 Collecting Event Logs

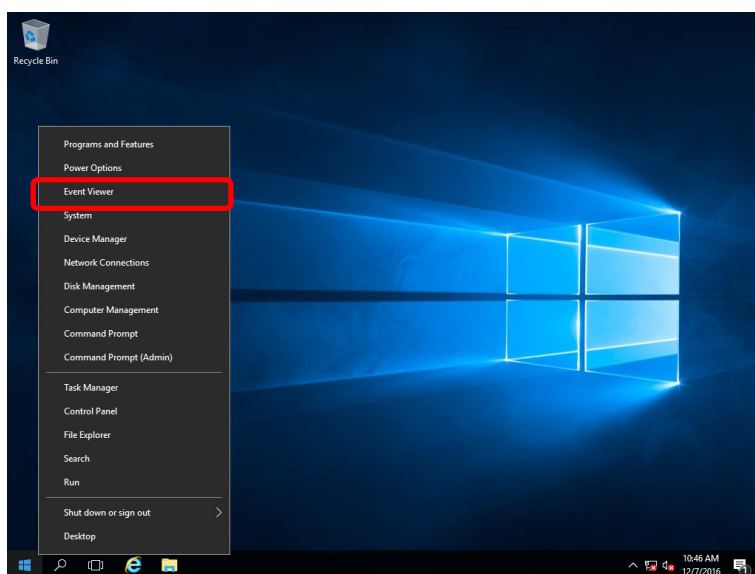
To collect various event logs follow the steps below.

Tips

If a STOP error, system error, or system stall occurs, restart Windows and follow the steps below.

4.1.1 Windows Server 2019

1. Right-click the left bottom of screen, and click **Event Viewer** from the menu displayed.

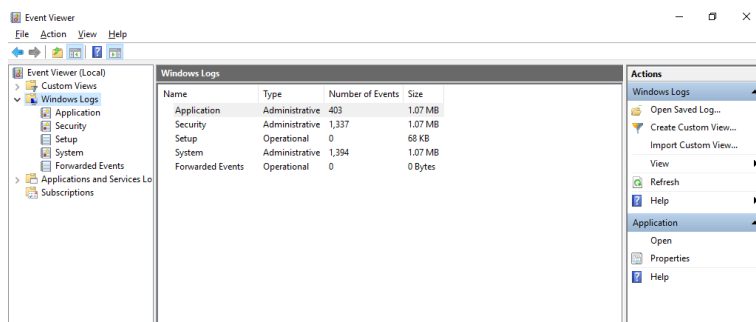


2. Select the type of log in **Windows Logs**.

Application records events related to running applications.

Security records events related to security.

System records events that occur in Windows system components.



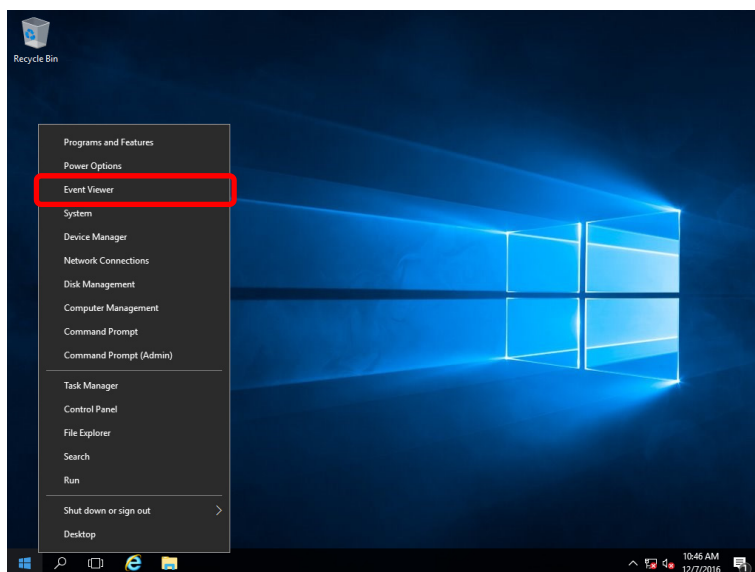
3. Click **Save All Events As** from **Action** menu.



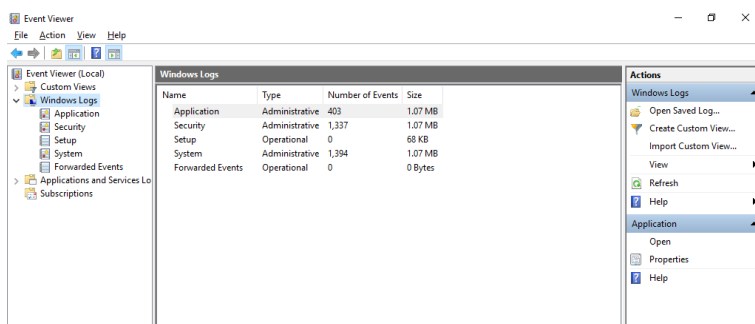
4. Type the file name of the archived log in **File name**.
 5. Select the type of the log file you want to save in **Save as type**, and then click **Save**.
- For details, refer to the online help of Windows.

4.1.2 Windows Server 2016

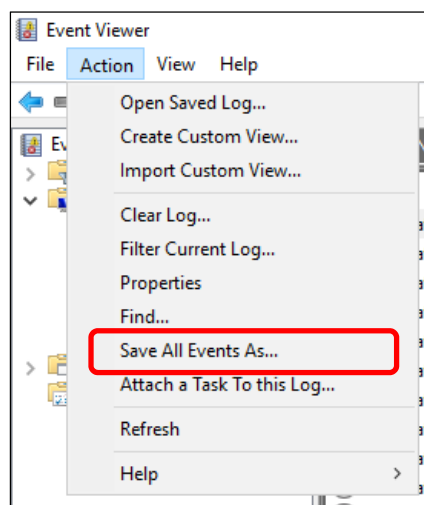
1. Right-click the left bottom of screen, and click **Event Viewer** from the menu displayed.



2. Select the type of log in **Windows Logs**.
Application records events related to running applications.
Security records events related to security.
System records events that occur in Windows system components.



3. Click **Save All Events As** from **Action** menu.



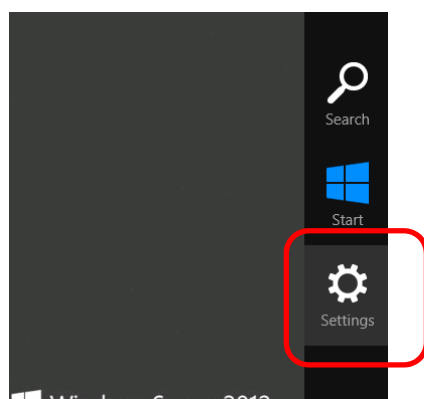
4. Type the file name of the archived log in **File name**.
5. Select the type of the log file you want to save in **Save as type**, and then click **Save**.

4.1.3 Windows Server 2012 R2

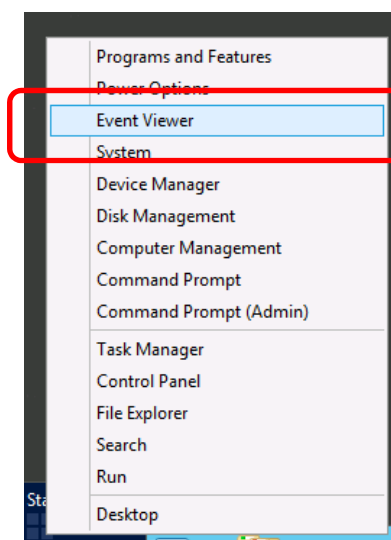
1. Click **Settings** on Charms Bar.

To go to the step 4, you can directly choose **Event Viewer** by right-clicking on the lower left corner of the screen.

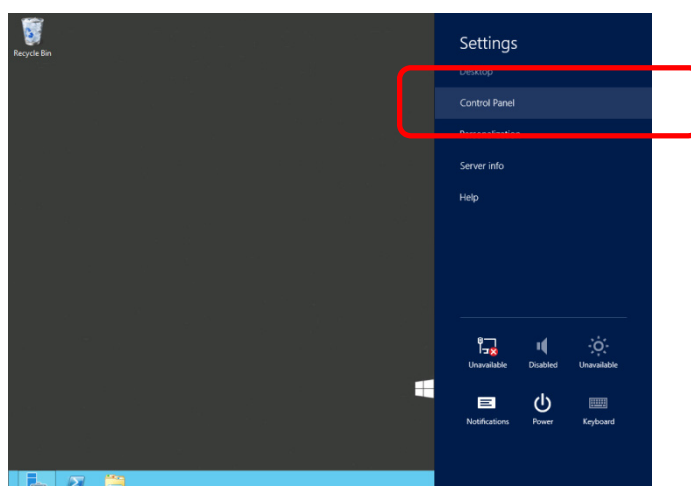
Charms Bar



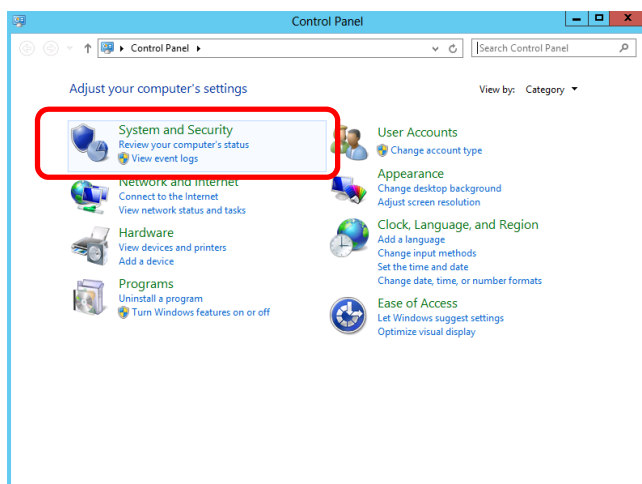
Right-click menu



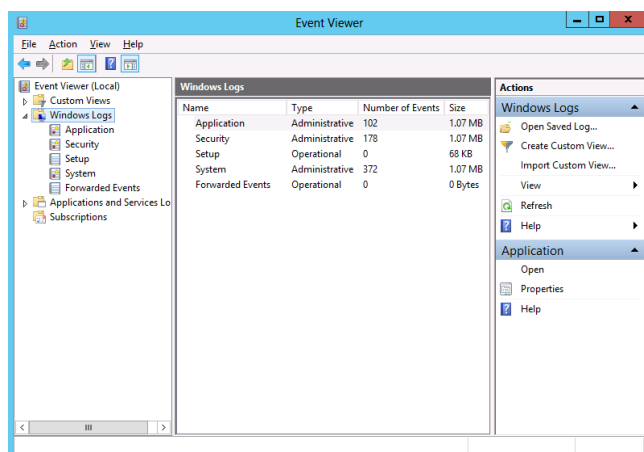
2. Click **Control Panel** from **Settings**.



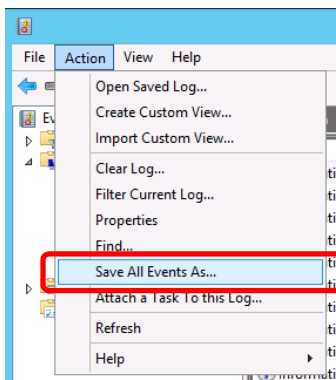
- Click **View event logs of System and Security** on **Control Panel**.



- Select the type of log in **Windows Logs**.
Application records events related to running applications.
Security records events related to security.
System records events that occur in Windows system components.



- Click **Save All Events As** from **Action** menu.



- Type the file name of the log file in **File name**.
- Select the type of the log file you want to save in **Save as type**, and then click **Save**.

4.2 Collecting Configuration Information

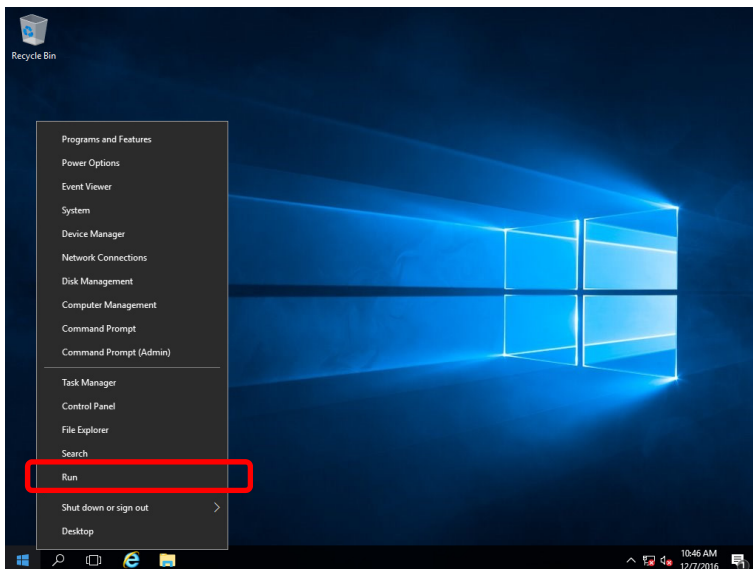
This section describes how to collect hardware information or configuration.

Tips

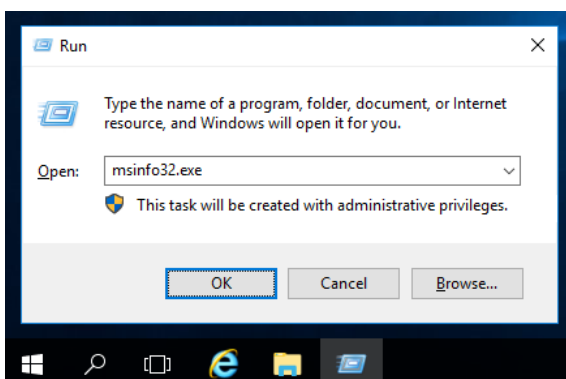
If a STOP error, system error, or system stall occurs, restart Windows and then follow the procedure below.

4.2.1 Windows Server 2019

1. Right-click the left bottom of screen, and click **Run** from the menu displayed.



2. Type **msinfo32.exe**, and then press <Enter> key.

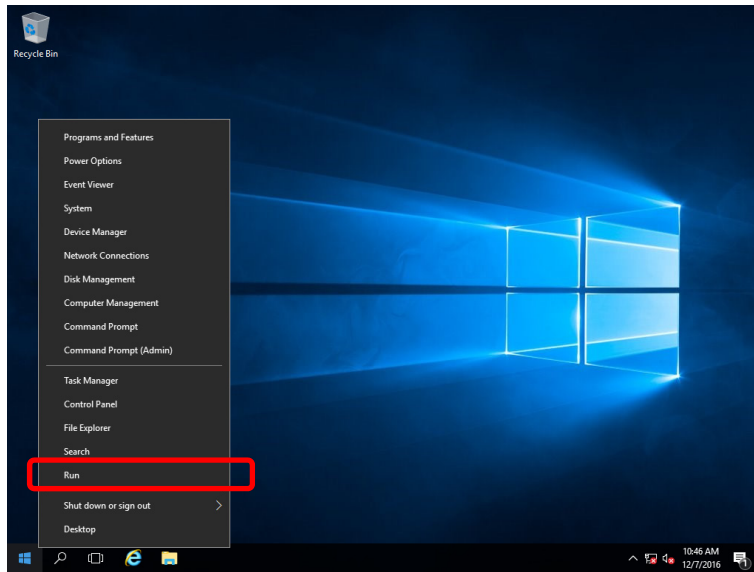


System Information starts.

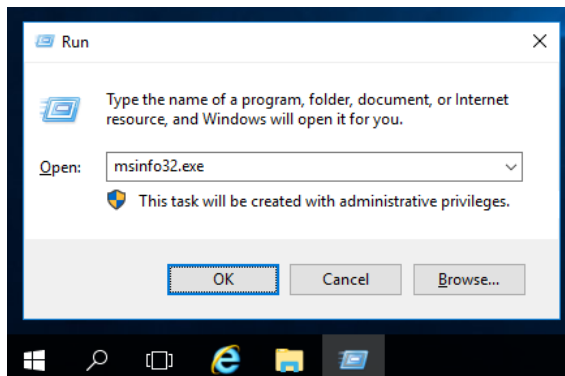
3. Click **Export** from **File** menu.
4. Type a file name to save in **File Name**, and then Click **Save**.

4.2.2 Windows Server 2016

1. Right-click the left bottom of screen, and click **Run** from the menu displayed.



2. Type **msinfo32.exe**, and then press <Enter> key.



System Information starts.

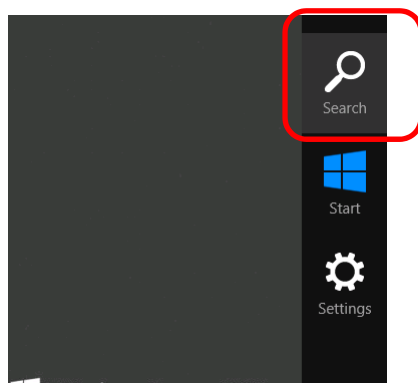
3. Click **Export** from **File** menu.
4. Type a file name to save in **File Name**, and then Click **Save**.

4.2.3 Windows Server 2012 R2

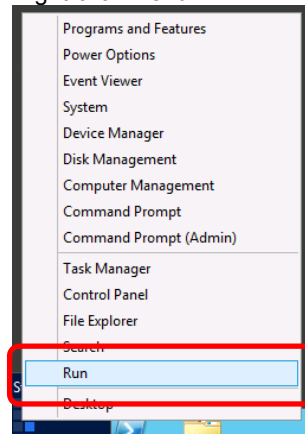
1. Click **Search** on Charms Bar.

You can also use **Run** feature by right-clicking on the lower left corner of the screen.

Charms Bar

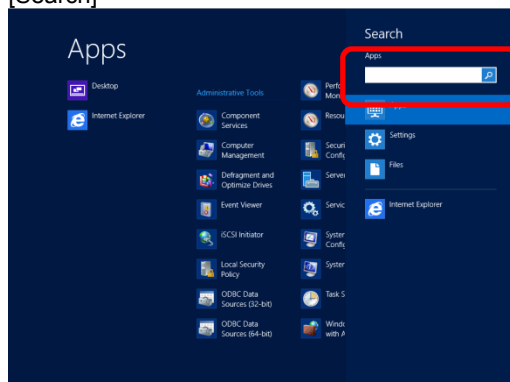


Right-click menu

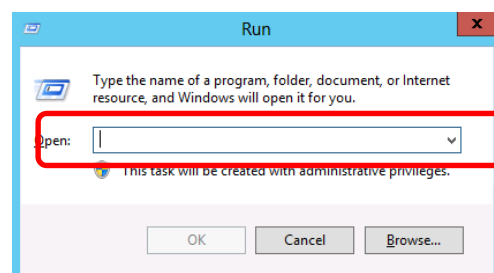


2. Type `msinfo32.exe` in the text box, and then press <Enter> key.

[Search]



[Run]



3. **System Information** starts.
4. Click **Export** from **File** menu.
5. Type a file name to save in **File Name**, and then Click **Save**.

4.3 Collecting User-Mode Process Dump

The user-mode process dump is the failure information related to application errors.

For details, see *Chapter 1 (6.2 How to Create a User-Mode Process Dump File)* in "Installation Guide (Windows)".

4.4 Collecting Memory Dump

If an error occurs, the dump file will be saved to acquire necessary information. You can specify any location for saving the diagnostic information. For details, see *Chapter 1 (6.1 Specifying Memory Dump Settings (Debug Information))* in "*Installation Guide (Windows)*".

Consult with your sales representative before dumping the memory. Dumping the memory while the server is in operating normally will affect the system operation.

Important

A message indicating insufficient virtual memory may appear when restarting the system due to an error. Ignore this message and proceed. Restarting the system may result in an inability to properly dump the data.

5. Troubleshooting

If this system does not operate as intended, check it according to the contents of the following checklist before sending it for repair. If an item in the checklist corresponds with a problem you are experiencing, follow the subsequent check and processing instructions.

If the system still does not operate normally, write down the messages displayed on the screen and then contact your sales representative.

5.1 Problem of Powering On

[?] Fail to power on the server

- ☐ Is the server properly supplied with power?
 - Check if the power cord connects to the power outlet (or UPS) that meets the power specifications for the server.
 - Use the power cord that comes with the server. Additionally, check the power cord for broken shield or bent plugs.
 - Make sure the power breaker for the connected power outlet is on.
 - If the power cord is plugged to a UPS, make sure the UPS is powered and it outputs power. Refer to the manual that comes with the UPS for details.

Power supply to the server may be linked with UPS using the Setup Utility.
- ☐ Have you pressed the POWER switch?
- ☐ Is the STATUS LED indicator lit in green?
 - If the STATUS LED indicator is lit in red or amber, check the system status using the iLO, and also check the connection of cables and optional items. If the problem persists, contact your maintenance service company.
- ☐ Is the window shown on the display?
 - Check the cable connection to the display and the power supply of the display.

[?] POST does not complete

- ☐ Is memory installed correctly?
 - Check if memory is installed correctly.
- ☐ Is the memory size large?
 - Wait for a while. The memory check takes longer than usual when the installed memory size is large.
- ☐ Did you perform any keyboard or mouse operation immediately after you started the server?
 - Restart the server and do not perform any keyboard or mouse operation until the POST start-up message appears.
- ☐ Are memory and PCI devices supported for use with this server?
 - Operation of the server with unauthorized devices is not supported.

[?] Fail to power on the server

- ☐ Did you press POWER Switch?
 - Press the power switch and verify that the power lamp has turned green.
- ☐ Does the POWER LED light amber?
 - Press the power switch and wait for 45 seconds.
- ☐ Does the STATUS LED light red or amber?
 - Use iLO to verify the contents of the Integrated Management Log (IML), and reattach the component indicated in the log. If nothing changes, replace the component.
- ☐ Is the power supply plugged in correctly?
 - Reinstall the power supply.
 - Verify that there are no faults in the power cable wiring.
 - Plug another device into the grounded outlet to verify that the outlet is working.
 - Verify that the power cord is not damaged by replacing it with one that is known to be working correctly.
- ☐ Is the power working correctly?
 - If the power is not working correctly, replace the power unit.
 - Verify that the corresponding circuit breaker is switched on.
 - Ask a certified technician to check the voltage and verify that the required specifications are satisfied.
 - If a kinetic enclosure power consumption cap or enclosure power restriction is enabled on a supported server, verify that enough power is being supplied to support the server.
- ☐ Does the server power unit meet the power requirements for the server's configuration?
 - If the server power unit does not meet the power requirements for the server's configuration, replace it.
- ☐ Is the device connected to a UPS?
 - When connected to a UPS, verify that the UPS power is on, and that power is being outputted from the UPS. Refer to the UPS's manual for details. Linked power supply settings for the UPS can be configured using the Setup Utility.
- ☐ Are you experiencing a problem not mentioned above?
 - Use iLO and check the Server Health Summary on the external monitor.

[?] The server does not complete POST, or the server completes POST with errors.

- ☐ Is the memory installed correctly?
 - Verify that the memory is installed correctly.
- ☐ Are the installed memory and PCI device supported by the device?
 - The functionality of devices other than those specified by our firm cannot be guaranteed.
- ☐ Does the STATUS LED light red or amber?
 - Use iLO to verify the contents of the Integrated Management Log (IML), and reattach the component indicated in the log. If nothing changes, replace the component.
- ☐ Is there a problem with the display?
 - Correct the display's wiring.

[?] Recovering from a Red Screen of Death (RSOD) screen.

```

X64 Exception Type 0D - General Protection Exception

RCX=AF000000AF000000 DX=0000000000000000 RB=0000000000000000 R9=FFFFFFFFFFFFFFF
RSP=000000009CDEB6E8 BP=0000000098251FBE AX=0000000098A45EAB BX=0000000000000000
R10=0000000000000004 I1=FFFFFFFFFFFFFFF 12=0000000000000000 13=0000000098251F00
R14=0000000000000018 15=0000000098251F00 SI=AF000000AF000000 DI=AF000000AF000000
CR2=0000000000000000 CR3=000000009CD4B000 CR0=80000013 CR4=00000668 CR8=00000000
CS=0000003B DS=00000030 SS=00000030 ES=00000030 RFLAGS=00010282
MSR: 0x1D9 = 00004801, 0x345=000033C5, 0x1C9=0000001F

LBRs From To From To
01h 0000000098A2E792->00000000961F2191 0000000098A2E8FE->0000000098A2E778
03h 0000000098A3CD97->0000000098A2E8E0 0000000098A36D00->0000000098A3CD75
05h 0000000098A30855->0000000098A36CDF 0000000098A307F3->0000000098A3083E
07h 0000000098A30759->0000000098A307ED 000000009CDF51A8->0000000098A30744
09h 000000009CDF5183->000000009CDF519B 000000009CDF516A->000000009CDF517D
0Bh 000000009CDF514F->000000009CDF515B 000000009CDF6ECF->000000009CDF5136
0Dh 000000009CDF6CFC->000000009CDF6EC3 0000000099891CA4->000000009CDF6CF8
0Fh 0000000099891331->0000000099891C9E 0000000099891C99->0000000099891330

CALL ImageBase ImageName+Offset
00h 0000000098A2D000 PlatformRecoveryApp+001792h
address out of range

```

Example of Red Screen of Death (RSOD) screen

- ☐ Are the installed memory and PCI device supported by the device?
 - The functionality of devices other than those specified by our firm cannot be guaranteed.
- ☐ Update the components, if an update is available for any of the following components:
 - PCI device firmware
 - iLO firmware
 - System ROM
- ☐ Have you changed the server configuration/settings or the system status?
 - If you have changed the server configuration/settings or the system status, a Red Screen of Death (RSOD) screen appears in rare cases before starting up the OS. This may cause the server to become uncontrollable. However, the server may recover from the RSOD by turning off and then on the power again.

[?] IML message "209 - Unsupported DIMM Configuration Detected - Installed DIMM configuration does NOT support configured AMP Mode. System will operate in Advanced ECC Mode" is displayed during POST

- ☐ Did you change the DIMM configuration?
 - If the "Fault Tolerant Memory (ADDDC)" mode is used, refer to *Chapter 2 DIMM* of the *User's Guide* and change it to a DIMM configuration that supports the "Fault Tolerant Memory (ADDDC)" mode.
 - If the "Fault Tolerant Memory (ADDDC)" mode is not used, perform setting by following the steps below.
 1. Press the <F9> key during POST to start System Utilities.
 2. Change "Workload Profile" to "Custom".
 3. Set "Advanced Memory Protection" to "Advanced ECC Support" mode.

5.2 Problem of booting EXPRESSBUILDER

[?] **EXPRESSBUILDER cannot start.**

- ☐ Is the system status correct?
 - EXPRESSBUILDER cannot start when the settings of BIOS/iLO are incorrect. To correct the internal settings, try the following procedure in order.
 - (a). AC OFF/ON and retry.
 - (b). Clear the EXPRESS configuration by using PERFORM MAINTENANCE > System Erase and Reset and retry.
 - (c). Restore the BIOS settings by using the following and retry.
System Configuration > BIOS/Platform Configuration (RBSU) > System Default Options > Restore Default Manufacturing Settings
 - (d). Restore the iLO settings by using the following and retry.
System Configuration > BMC Configuration Utility > Set to factory defaults

[?] **Unable to install the OS or installation fails**

- ☐ Is the OS you are trying to install Windows?
 - Only the Windows OS can be installed with EXPRESSBUILDER. For the types of Windows that can be installed, refer to the *"Installation Guide (Windows)"*.

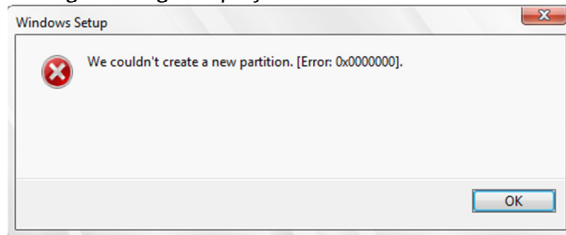
[?] **System time is off**

- ☐ Did you reboot with the upper right icon of EXPRESSBUILDER?
 - If the system is rebooted with the icon, the system time of RBSU may be off by tens of seconds. If this occurs, set it again with RBSU, etc.

5.3 Problem of Installing OS

[?] Unable to create a partition when installing Windows Server 2012 R2

- ☐ Is the following message displayed?



→ The message above means that you failed to create a partition. In this case, delete the partition you attempted to create, and then create a new partition.

If you have connected a data disk to a partition, be careful not to delete that partition.

For details, refer to the Microsoft website below:

Windows Server 2012 R2

<https://technet.microsoft.com/en-us/library/dn387077.aspx>

[?] Unable to install OS

- ☐ Is the hard disk drive properly installed?

→ Make sure that the hard disk drive is installed securely and that cables are properly connected.

- ☐ Is the disk format correct?

→ Follow the table below to create a partition depending on the boot mode.

Boot mode	Disk format
UEFI Mode	GPT (GUID Partition Table)
Legacy Mode	MBR (Master Boot Record)

For example, the following message appears if an MBR disk is specified as the system drive of Windows on UEFI boot mode.



To change the disk format, clear the partition configuration and create a new partition. All of the data on the hard disk drive will delete. Back up necessary data before clearing the partition configuration.

- ☐ Did you configure the RAID controller?

→ For a RAID system, use EXPRESSBUILDER or RAID Configuration Utility (Off-line Utility or LSI Software RAID Configuration Utility) to properly configure the RAID controller before installing OS.

- ☐ Did you create a logical drive?
 - For a RAID system, create a logical drive using EXPRESSBUILDER or RAID Configuration Utility (Off-line Utility or LSI Software RAID Configuration Utility) to install OS.

[?] **Unable to install Windows**

- ☐ Did you check the precautions for installation?
 - For installing OS, see "*Installation Guide (Windows)*".

[?] **A product key is not requested**

- ☐ Did you use the backup DVD-ROM?
 - You do not need to type the product key when installing Windows with the backup DVD-ROM.

[?] **The Telnet Service is not installed**

- Adjust the computer name to 14 characters or less (*), and then install the Telnet Service according to the following procedure:

- (1) Click **Run** on Start menu.
- (2) Enter `tlntsvr/service` in **Open**, and then click **OK**.
- (3) Click Start menu, point to **Control Panel**, click **Administrative Tools**, and then click **Services** to confirm whether the Telnet Service is registered.

* You can specify the computer name at 15 characters or more after installing the telnet service.

[?] **An error message appears after the graphics accelerator is installed**

- ☐ Is the Server Core installation of Windows Server 2012 R2?
 - An application error is recorded in event log after restarting. Ignore this event log because it does not affect system operation.

5.4 Problem of Starting OS

[?] Unable to start OS

- ☐ Have the settings of the RAID controller changed?
 - Specify the correct settings with RAID Configuration Utility (Off-line Utility or LSI Software RAID Configuration Utility).
- ☐ Is the RAID controller found by POST?
 - Be sure to connect the RAID controller correctly and retry.
- ☐ Is the RAID controller installed firmly straight into the PCI slot?
 - Install the RAID controller properly.
- ☐ Is the RAID controller mounted on the PCI slot for which the mounting is restricted?
 - Check the mounting restrictions of the server and then mount the RAID controller on the correct slot.
- ☐ Are the hard disk drives properly installed?
 - Install the hard disk drives properly.
- ☐ Is the cable connected to the hard disk drive or disk array unit correctly?
 - Connect the SAS cable properly.
- ☐ Is OS Boot Manager registered in "UEFI Boot Order"?
 - In UEFI boot, in case OS Boot Manager (Windows Boot Manager, Red Hat Enterprise Linux, etc.) is not registered in "UEFI Boot Order", use "One-Time Boot" menu for now to boot OS from your boot device. By the OS you started, OS Boot Manager is registered at the top of "UEFI Boot Order". After that, you will be able to start from OS Boot Manager you registered. In case you cannot boot OS from the boot device even after you have executed the above step, add manually the file and pass of OS Boot Manager to "UEFI Boot Order" from "Add Boot Options" menu.
- ☐ Is Boot Order in the order you expected?
 - Set up the suitable Boot Order from "UEFI Boot Order" menu or "Legacy BIOS Boot Order" menu.
- ☐ Does the boot mode setting of System Utility march the "Boot Mode" of the installed OS?
 - Select **System Configuration > BIOS/Platform Configuration (RBSU) > Boot Options** from System Utility, and then set "Boot Mode" appropriately.
- ☐ When enabling Secure Boot, does the optional card used for booting support Secure Boot?
 - When "Secure Boot" is enabled, the optional card UEFI driver must be signed with Microsoft key in order to make the optional card recognized as a bootable device. Set to the UEFI driver of.

[?] Unable to start OS

- ☐ Does the configured boot media match the OS installed on the boot media?
 - Configure boot mode property.
- ☐ In an OS installed on the intended boot device?
 - Install an OS on the intended boot device.
- ☐ Is VMware ESX starting up in UEFI boot mode?
 - When booting VMware ESX in UEFI Boot Mode, enable UEFI Optimized boot.

☐ Is secure boot enabled?

→ To make the option card recognizable as a bootable device when Secure Boot has been enabled, you need to have an option card UEFI driver that has been signed with the Microsoft key. Set all option cards to signed UEFI driver.

5.5 Problem of RAID System

[?] **Unable to rebuild the RAID array**

- ☐ Is the capacity of the hard disk drive to be rebuilt correct?
 - Use a hard disk drive with the same capacity as that of the faulty hard disk drive.
- ☐ Is the logical drive RAID0?
 - RAID0 cannot be rebuilt because it has no redundancy. Replace the failed hard disk drive, reconfigure the RAID array, and recover the drive using backup data.

[?] **Unable to automatically rebuild the RAID array**

- ☐ Did you wait for sufficient time until the hard disk drive was replaced?
 - Follow the steps below to use the auto-rebuilding feature.
 - (1) Remove a failure HDD.
 - (2) Wait for at least 90 seconds.
 - (3) Install a new HDD.

[?] **The hard disk drive failed**

- Contact your sales representative.

[?] **Additional battery is not found**

- ☐ Are the cable between the battery pack and battery board and the control cable between the battery board and battery connector connected correctly?
 - Connect the cables correctly.
- ☐ Is this message displayed after the battery is connected?
 - If the battery charging status is low, the battery is not found. If the battery is not found although 24 hours has passed, restart the system once.
 - If the battery is not found although the above action has been taken, the additional battery may be faulty. Contact your sales representative.

[?] **DISK LED flashes**

- ☐ Does DISK LED flashes frequently even while the hard disk drive is not accessed?
 - Ignore the flashing. When Patrol Read is running, the DISK LED flashes even if the hard disk drive is not being accessed. If a SATA hard disk drive is used, the DISK LED stays on.

[?] **During the POST process, the controller is not visible or shows errors**

- Make sure that the controller is supported for the server.
- Make sure that the controller is installed and seated properly.
- Make sure that the cables are properly connected.
- If the controller is physically damaged, replace it.

- If the controller is recognized by the system ROM, then reseal the controller.
- Run controller diagnostics and follow the steps displayed.
- Update the firmware.
- Download the Active Health System log.

[?] **Controllers are no longer redundant (the controller shows errors during the POST process, or the cache is disabled)**

- Make sure that the controllers are supported for the server.
- Make sure the controllers are installed and seated properly.
- Make sure that the cables are properly connected.
- If the controller is physically damaged, replace it.
- Run controller diagnostics and follow the steps displayed.
- Make sure that the controllers are compatible controller models.
- Verify that the controller cache sizes are compatible.
- Verify that the FBU (flash backup unit) is installed and connected correctly.
- Update the firmware.
- Download the Active Health System log.

[?] **Smart Array S100i SR Gen10 SW RAID drives are not found when RAID mode is disabled**

- When Smart Array S100i SR Gen10 SW RAID controller is enabled on a server and RAID mode is disabled in the System Utility, then the drives are listed as AHCI drives or H220i drives and the RAID controller is not found in POST or device manager. When RAID mode is enabled, the drives appear as Smart Array S100i SR Gen10 SW RAID controller drives.

Below is the procedure to correct the problem.

1. Press the <F9> key during the startup process to access System Utility.
2. In the System Configuration menu, select **BIOS/Platform Configuration (RBSU) → Storage Options → SATA Controller Options → Embedded SATA Configuration → Smart Array SW RAID Support.**
3. Press <F10> key to save the configuration.
4. Reboot the server.

[?] **Data located on drives accessed in RAID mode is not compatible with data accessed from non-RAID mode**

- Recommends that you access drive data only when the same RAID or non-RAID mode is enabled. Back up and restore the data on the drives.

[?] **The Smart Array controller does not show logical drives after moving drives to a new server or JBOD**

→ Be sure to follow all drive roaming rules when migrating drives.

Note

Drive roaming lets you move disk drives and arrays while maintaining data availability. You can move one or more disk drives in a configured logical drive to a different bay position as long as the new bay position is accessible by the same controller. In addition, you can move a complete array from one controller to another, even if controllers are in different servers. The logical drive status must be good before you move physical drives to a new bay position.

Drive roaming is an offline feature. There is no method for removing an array while the server is online and then moving it to a new physical location.

[?] **Windows Device Manager does not display the correct controller name when using N8103-189/190/191/192/193/194/195/196/197/201**

→ Windows Device Manager may not display the correct controller name in an environment using N8103-189/190/191/192/193/194/195/196/197/201. There is no problem affecting operations. Continue to use it as is.

5.6 Problem of Internal Devices and Other Hardware

[?] Unable to access the internal or external devices

- ☐ Are cables properly connected?
 - Make sure that the interface cables and power cord are properly connected. Also make sure that the cables are connected in the correct order.
- ☐ Is the power-on order correct?
 - When the server has any external devices connected, power on the external devices first, then the server.
- ☐ Did you install drivers for connected optional devices?
 - Some optional devices require specific device drivers. Refer to the manual that comes with the device to install its driver.
- ☐ Is option board setting correct?
 - Refer to the manual that comes with the board for details to specify I/O port address, and other settings.

[?] The keyboard or mouse does not work

- ☐ Is the cable properly connected?
 - Make sure that the cable is connected to the connector on the front or rear of the server.
- ☐ Is BIOS configuration correct?
 - In System Utility, you can change the configuration of USB. In System Utility, from **System Configuration > BIOS/Platform Configuration (RBSU) > System Options > USB Options**, check the configuration of USB port to which the keyboard is connected.
- ☐ Are the server drivers installed?
 - Refer to the manual that comes with your OS to check that the keyboard and mouse drivers are installed.

[?] Unable to access the hard disk drive

- ☐ Is the hard disk drive supported by the server?
 - Operation of any device that is not authorized by NEC is not supported.
- ☐ Is the hard disk drive properly installed?
 - Check the hard disk drive installation status and the cable connections.

[?] The hard disk drive is failed

- Be sure no loose connections exist.
- Update the components, if an update is available for any of the following components:
 - Smart Array Controller firmware
 - Dynamic Smart Array driver
 - Host bus adapter firmware
 - Expander backplane SEP firmware
 - System ROM
- Be sure the drive or backplane is cabled properly.
- If the drive's data cable is faulty, replace it.

- If a dummy tray is attached, verify that it is attached correctly.
- Run SSA and check the status of the failed drive.
- Be sure the replacement drives within an array are the same size or larger.
- Be sure the replacement drives within an array are the same drive type, such as SAS, SATA, or SSD.
- Power cycle the server. If the drive shows up, check to see if the drive firmware needs to be updated.

[?] Drives are not recognized

- Be sure no power issues exist.
- Be sure no loose connections exist.
- Update the components, if an update is available for any of the following components:
 - Smart Array Controller firmware
 - Dynamic Smart Array driver
 - Host bus adapter firmware
 - Expander backplane SEP firmware
 - System ROM
- Be sure the drive or backplane is cabled properly.
- Check the drive LEDs to be sure they indicate normal function.
- Be sure the drive is supported.
- Power cycle the server. If the drive appears, check to see if the drive firmware needs to be updated.
- Be sure the drive bay is not defective by installing the hard drive in another bay.
- Be sure the replacement drives within an array are the same size or larger.
- Be sure the replacement drives within an array are the same drive type, such as SAS, SATA, or SSD.
- When using a disk array controller, be sure the drive is configured in a disk array by running SSA.
- Be sure that the correct controller drivers are installed.
- Be sure that the controller supports the hard drives being installed.
- If SAS expanders are used, be sure the Smart Array controller contains a cache module.
- If a storage enclosure is used, be sure the storage enclosure is powered on.
- If a SAS switch is used, be sure disks are zoned to the server using the Virtual SAS Manager.
- Be sure that RAID mode is enabled in System Utility.

[?] Data is inaccessible

- ☐ Are the files corrupt?
 - Run the repair utility for the operating system.
- ☐ Do viruses exist on the server?
 - Run a current version of a virus scan utility.
- ☐ If a TPM is installed, is it correctly enabled on the server?
 - Be sure that the TPM is enabled in System Utility. If the TPM is not enabled, follow the TPM replacement recovery procedure in the operating system document.
- ☐ Does an encrypted file exist?
 - When migrating encrypted data to a new server, follow the recovery procedures in the operating system document.

[?] Server response time is slower than usual

- Review information about the operating system encryption technology, which can cause a decrease in server performance.
- ☐ Is the drive full?
 - Be sure the drive is not full. If needed, increase the amount of free space on the drive. Recommends that drives have a minimum of 15 percent free space.
- ☐ Is a recovery operation pending on the logical drive?
 - Make sure that a recovery operation is not pending on the logical drive by using SSA.

[?] SmartDrive icons or LEDs illuminate errors for the wrong drive or an error message is displayed in POST, SSA or SSADUCLI

- Make sure that the cabling from the drive backplane to the mother board is correct.

[?] POST message or IML message is registered

- Replace the device, because the device is approaching the maximum usage limit for writes to the device.

[?] Additional internal or external devices do not operate correctly.

- Be sure the internal or external devices being installed are a supported option on the server.
- Be sure the issue is not caused by a change to the hardware release. For details, see the NEC web site.
- Be sure the new internal or external devices are installed properly.
- Be sure no memory, I/O, or interrupt conflicts exist.
- Be sure all cables are connected to the correct locations and are the correct lengths.
- Be sure other components were not accidentally unseated during the installation of the new internal or external devices.
- Be sure all necessary software updates, such as device drivers, ROM updates, and patches, are installed and current, and the correct version for the hardware is installed.
- After installing or replacing boards or other options, verify that the system recognizes all changes to the hardware in the options setup in System Utilities. If the new hardware is not properly configured, a POST Error message indicating the configuration error may be registered.
- Be sure all switch settings are set correctly.
- Be sure all boards are properly installed in the server.

[?] An unknown problem occurs with an internal or external device.

- Check the server LEDs to see if any statuses indicate the source of the issue.
- Be sure no loose connections exist.
- Turn the server's power off, and follow the procedure below.
 1. Power down and disconnect power to the server. Remove all power sources to the server.

2. Reduce the server to the minimum hardware configuration by removing all cards or devices that are not necessary to power on the server. Keep the monitor connected to view the server power-on process.
3. Reconnect power, and then power on the system. If the system fails in this minimum configuration, one of the primary components has failed. If you have already verified that the processor, power supply, and memory are working before getting to this point, replace the motherboard. If not, be sure each of those components is working.
4. If the system boots and video is working, add each component back to the server one at a time, restarting the server after each component is added to determine if that component is the cause of the issue. When adding each component back to the server, be sure to disconnect power to the server and follow the description in the server document.

[?] A problem is occurs when using an internal or external device made by another company.

- Be sure that the server and OS support the device.
- Verify that the latest version of the driver, or the version of the driver appropriate for the device is installed.
- Be sure the device is properly installed.

[?] The cooling fan does not operate correctly.

- Verify that the fan is attached correctly. If the fan is not attached correctly, remove the top cover and fix the fan in place according to the user's guide for the server.
- Make sure that the cooling fan configuration meets the functional requirements of the server.
- Replace any required non-functioning cooling fans and restart the server.
- Be sure all fan slots have the cooling fans or blank covers installed.
- Check the cooling fan airflow path is not blocked by cables or other material.
- Verify that the top cover is attached correctly. If the server is operated for an extended period of time with the top cover removed, airflow might be impeded, causing thermal damage to components.
- Be sure no POST error messages are displayed while booting the server that indicate temperature violation or fan failure information. For the temperature requirements for the server, see the User's Guide of the server.
- Use iLO or an optional IML viewer to access the IML to see if any event list error messages relating to the cooling fans are listed
- In the iLO web interface, navigate to the **Information > System Information** page and check the following information:
 1. Click the **Fans** tab and verify the fan status and fan speed.
 2. Click the **Temperatures** tab and verify the temperature readings for each location on the Temperatures tab. If a hot spot is located, then check the airflow path for blockage by cables and other material. A hot spot is not an absolute temperature but is relative to a component specification. Hot spot is defined as temperature on a sensor within 3°C of a Caution threshold listed on the Temperature tab.

- For BladeSystem c-Class enclosure fan issues, review the fan section of OA SHOW ALL and the FAN FRU low-level firmware.

[?] The cooling fan operates at a higher speed than normal.

- In the iLO web interface, navigate to the **Information > System Information** page and check the following information:
 - Click the **Fans** tab. Fan speeds can be high if a sensor temperature is within approximately 10°C of the Caution threshold.
 - Click the **Temperatures** tab, and check the fan status and fan speed. Fan speeds greater than 60% are expected to be loud.
- Update the server to the latest firmware versions, such as iLO firmware, system ROM, option firmware, etc.
- Verify that all air ducts and required blanks, such as drive blanks, processor heatsink blanks, dummy trays, etc., are installed.
- Make sure that the correct processor heatsink is installed.
- Make sure that the correct fan is installed, if the system supports both standard fans and high performance fans.

[?] The cooling fan makes excessive noise while operating at low speed.

- Replace the cooling fan.

[?] A cooling fan with hot-plug support does not operate correctly.

- Check the server LEDs to see if any statuses indicate the source of the issue.
- Be sure no POST error messages are displayed.
- Be sure hot-plug fan requirements are being met. For details, see User's Guide of the server.

[?] The TPM is no longer detected from System Utility.

- Contact your maintenance service company, and replace it with the new motherboard and TPM kit.

[?] The memory does not function correctly.

- Check any server LEDs that correspond to memory slots.
- Be sure the memory meets the server requirements. For details, see User's Guide of the server.
- Be sure the memory installs properly.
- Update the system ROM to the latest version.
- Verify that the DIMM is installed correctly according to the procedure.
- Reseat the DIMM.
- Replace the DIMM.
- If the third-party memory is installed on the server, remove it.

[?] Server is out of memory

- Be sure the memory meets the server requirements. For details, see User's Guide of the server.
- Be sure no operating system errors are indicated.
- Update the system ROM to the latest version.

[?] POST error message or IML message of DIMM is displayed.

- Make sure that the Advanced Memory Protection settings and DIMMs are installed properly.
- Make sure that the DIMMs are supported on the server.
- Be sure that the associated processor is installed for all DIMMs on the server.
- Update the system ROM to the latest version.

[?] Server fails to recognize existing memory.

- Be sure the server supports processor installed in the server.
- For all DIMMs installed in the server, be sure the associated processor is installed.
- Be sure the memory is configured properly.
- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] The server does not recognize new memory installed on the server

- Be sure the memory is the correct type for the server.
- Be sure the memory is installed according to the server requirements. For details, see User's Guide of the server.
- Be sure you have not exceeded the memory limits of the server or operating system. For details, see User's Guide of the server.
- Be sure the server supports the number of processor cores. For details, see User's Guide of the server.
- Be sure no Event List error messages are displayed in the IML.
- Be sure the memory is installed properly.
- If the memory is faulty, replace it.
- Update the system ROM to the latest version.

[?] A STOP error, a blue screen (Windows), or a purple diagnostic screen (VMware) is displayed.

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] A Linux kernel panic occurs.

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] Server restarts or powers down unexpectedly

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] Parity errors occur

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] Performance of memory is degraded

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] The memory LED is amber

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] ECC errors occur with no other symptoms

- Reseat the DIMM.
- Update the system ROM to the latest version.
- Replace the DIMM.

[?] POST error message or IML message is displayed indicating an NVDIMM restore error

- Remove and replace the failed NVDIMM.

[?] POST error message or IML message is displayed indicating an NVDIMM backup error

- Sanitize the NVDIMM
- If the error persists, replace the NVDIMM.

[?] POST error message or IML message is displayed indicating an NVDIMM uncorrectable memory error

- Sanitize the NVDIMM
- If the error persists, replace the NVDIMM.

[?] If NVDIMM-N Memory Interleaving is enabled, all NVDIMMs on a processor are disabled

- Sanitize the NVDIMM
- If the error persists, replace the NVDIMM.

[?] If NVDIMM-N Memory Interleaving is disabled, only the NVDIMM indicated is disabled

- Sanitize the NVDIMM
- If the error persists, replace the NVDIMM.

[?] POST error message or IML message is displayed indicating an NVDIMM backup power error

- Check that the Flash Backup Unit (FBU) is installed and functioning properly.
- Reseat the NVDIMM and DIMM.
- If the error persists, replace the NVDIMM.

[?] A POST Error message or an IML message indicating the error of the NVDIMM controller will be registered

- Update the NVDIMM firmware.
- If the error persists, replace the NVDIMM.

[?] A POST Error message or an IML message indicating the erasure error of the NVDIMM will be registered

- Copy the data to the new NVDIMM by following the procedure below.
 1. Save the contents of the NVDIMM to other media to preserve the data.
 2. Replace the NVDIMM.
 3. Sanitize the new NVDIMM.
 4. Copy the preserved data to the new NVDIMM.

[?] A POST Error message or an IML message indicating the equipment error of NVDIMM will be registered

- Copy the data to the new NVDIMM by following the procedure below.
 1. Save the contents of the NVDIMM to other media to preserve the data.
 2. Replace the NVDIMM.
 3. Sanitize the new NVDIMM.
 4. Copy the preserved data to the new NVDIMM.

[?] A POST Error message indicating the sanitization error of the NVDIMM will be registered

- Retry sanitizing the NVDIMM
- If the error persists, replace the NVDIMM.

[?] If one or more new NVDIMMs are installed in the server where the NVDIMM has been already installed, an Error message indicating that all the NVDIMMs are disabled will be registered

- Do one of the following:
 - Remove the newly installed NVDIMMs to continue using the existing NVDIMMs in the server.
 - Sanitize the NVDIMMs indicated to begin using all NVDIMMs in the server.

[?] If NVDIMM interleaving is disabled, only the NVDIMMs with corrupted metadata are disabled

- Sanitize all NVDIMMs disabled due to corrupt metadata.

[?] If NVDIMM Interleaving is enabled, all NVDIMMs on a processor are disabled

- Sanitize all NVDIMMs disabled due to corrupt metadata.

[?] All NVDIMMs on processor X are disabled

- One or more NVDIMMs were removed from this server and the server has NVDIMM-N Memory Interleaving enabled. Do one of the following:
 - Reinstall the missing NVDIMMs.
 - Sanitize all NVDIMMs on processor X to begin using the smaller interleaved set.

[?] A POST Error message or an IML message indicating the memory initialization error or the uncorrectable error will be registered. If NVDIMM Interleaving is enabled, all NVDIMMs on processor X are disabled. If NVDIMM Interleaving is disabled, then only the affected NVDIMMs are disabled.

- Perform the procedure below.
 1. Reseat the NVDIMMs and all DIMMs in the server.
 2. Sanitize all NVDIMMs disabled due to this error.
 3. If the error persists, replace the NVDIMM.

[?] A POST Error message or an IML message will be registered. If NVDIMM Interleaving is enabled, all NVDIMMs on processor X are disabled. If NVDIMM Interleaving is disabled, then only the affected NVDIMMs are disabled.

- ☐ Does the server not match the original server in which the NVDIMM was used, and is NVDIMM-N Memory Interleaving enabled?
 - Perform the procedure below.
 1. Remove the processor and replace it with the previously installed processor type.
 2. Reboot the server.
 3. Save the contents of the NVDIMM to other media to preserve the data.
 4. Remove the processor and replace it with the new processor.
 5. Sanitize all NVDIMMs in the system.
 6. Restore data to the NVDIMM.
 7. Remove the processor and replace it with the previously installed processor type.

- Was the NVDIMM moved?
 - Perform one of the procedures below.
 - To preserve data, install the NVDIMM in the location indicated by the message.
 - Sanitize all NVDIMMs indicated by the message. The data on the NVDIMM is not available after sanitization.

[?] QPI Snoop Configuration error message for NVDIMMs is received and all NVDIMMs on a processor are disabled

- Perform one of the procedures below.
 - Change the QPI Snoop Configuration setting to match the previous system.
 - Sanitize all NVDIMMs indicated by the error. The data on the NVDIMM is not available after sanitization.

[?] POST error message or IML message is displayed, and NVDIMMs are disabled in the system (the NVDIMM-N Memory Interleaving is enabled, then all NVDIMMs on processor X are disabled)

- The NVDIMM was previously being used in a server with NVDIMM-N Memory Interleaving enabled, but is this server configured for NVDIMM-N Memory Interleaving disabled?
 - Perform one of the procedures below.
 - Change the NVDIMM-N Memory Interleaving setting for the NVDIMM to the same setting for the server and then, reboot the server. Below is the procedure to change the settings.
 - If the NVDIMM was previously installed in a server that had NVDIMM-N Memory Interleaving enabled, enable NVDIMM-N Memory Interleaving in System Utility.
 - Sanitize all NVDIMMs indicated. All data on the NVDIMM will not be available after sanitization.

[?] POST error message or IML message is displayed, and NVDIMMs are disabled in the system (the NVDIMM-N Memory Interleaving is disabled, then only affected NVDIMMs are disabled)

- The NVDIMM was previously being used in a server with NVDIMM-N Memory Interleaving disabled, but is this server configured for NVDIMM-N Memory Interleaving enabled?
 - Perform one of the procedures below.
 - Change the NVDIMM-N Memory Interleaving setting for the NVDIMM to the same setting for the server and then, reboot the server. Below is the procedure to change the settings.
 - If the NVDIMM was previously installed in a server that had NVDIMM-N Memory Interleaving disabled, disable NVDIMM-N Memory Interleaving in System Utility.
 - Sanitize all NVDIMMs indicated. All data on the NVDIMM will not be available after sanitization.

[?] POST error message or IML message is displayed, and all NVDIMMs on processor X are disabled,

- Was the NVDIMM previously inserted in a server on which Channel Interleaving was enabled, while Channel Interleaving is disabled on the current server?
 - Perform one of the procedures below.
 - Change the Channel Interleaving setting in System Utility. Below is the procedure to change the settings.

- If the NVDIMM was previously installed in a server that had Channel Interleaving enabled, enable Channel Interleaving in System Utility.
- Sanitize all NVDIMMs on processor X.

[?] POST error message or IML message is displayed, and all NVDIMMs in the system are disabled

- ☐ Are NVDIMMs installed on a server?
 - Disable Node Interleaving in System Utility.
- ☐ Is Advanced Memory Protection set to an option other than Advanced ECC.
 - Change the setting for Advanced Memory Protection to Advanced ECC.

[?] A POST Error message or an IML message indicating that the Flash Backup Unit (FBU) is not fully charged will be registered

- To continue using the NVDIMMs, do one of the following:
 - Change NVDIMM-N Backup Power Policy to **Wait for Backup Power on Boot**.
 - If NVDIMM-N Backup Power Policy is already configured to **Wait for Backup Power on Boot**, then reboot the server.
 - Wait for the flash backup unit (FBU) to charge sufficiently.

[?] POST error message or IML message is received indicating an unsupported NVDIMM on the system

- Replace the NVDIMM with a supported HPE SmartMemory NVDIMM

[?] POST error message or IML message is displayed, and the system halts

- Remove the unsupported capacitor pack from the system, and then install a flash backup unit (FBU).

[?] POST error message or IML message is displayed indicating that the System Programmable Logic Device revision in this system does not meet minimum requirements for operation with NVDIMMs

- Remove all NVDIMMs from the server.

[?] POST error message or IML message of the processor is received

- Be sure each processor is supported by the server and is installed as directed in the server documentation. The processor socket requires very specific installation steps and only supported processors should be installed.
- Be sure the server ROM is current.
- Be sure you are not mixing processor stepping, core speeds, or cache sizes if this is not supported on the server.
- If the server has only one processor installed, reseal the processor.
- If the server has only one processor installed, replace it with a known functional processor.
- If the server has multiple processors installed, test each processor:

1. Remove all but one processor from the server. Replace each with a processor terminator board or blank, if applicable to the server.
2. Replace the remaining processor with a known functional processor. If the issue is resolved after you restart the server, a fault exists with one or more of the original processors. Install each processor one by one, restarting each time, to find the faulty processor or processors. At each step, be sure the server supports the processor configurations.

[?] **POST error message or IML message is received indicating an uncorrectable machine check exception**

- Replace the processor.

[?] **Error message is received indicating low power or loss of power**

- Replace the battery.

[?] **POST message or IML message is received indicating an issue with either the motherboard or the power backplane**

- Check all error messages for possible issues with other components and troubleshoot components identified.
- Make sure that no loose connections exist on the motherboard or power backplane. It is not necessary to reseat processors.
- Remove any components recently added.
- Using System Utility <F9>, set the system configuration back to the default value. To set the system configuration back to the default value in case the system does not start, use Jumper Switch SW6.
- Gather necessary information and contact your sales representative.

[?] **System does not boot from the microSD card**

- Be sure the drive boot order in the System Utility is set so that the server boots from the microSD card.
- Use the iLO web interface to verify that the microSD card is detected by LO.
- Remove all power from the server. Reseat the microSD card, and then power on the server.

[?] **System does not boot from the USB drive key**

- Be sure that USB is enabled in the System Utility.
- Make sure that the server is configured to boot from the USB drive in "UEFI Boot Order" or "Legacy BIOS Boot Order" of System Utility.
- Reseat the USB drive key.
- Move the USB drive key to a different USB port, if available.

[?] The tape drive is stuck and will not eject

- Manually press the eject button. Wait for up to 10 minutes for the tape to rewind and eject.
- Perform a forced eject:
 1. Press and hold the Eject button for at least 10 seconds.
 2. Wait for up to 10 minutes for the tape to rewind and eject. The green Ready LED should flash.
- Power cycle the drive. Wait for up to 10 minutes for the drive to become ready again.
- Check for conflicts in backup software services.
- Check the SAS/HBA/Driver configuration of the drive.
- Inspect media and cables, and discard any that are faulty or damaged.

[?] A trouble of data import or export has occurred on the tape drive.

- Execute Drive Assessment Test with StorageWorks Library and Tape Tools.

Important

If you execute Drive Assessment Test, the tape is overwritten. If you do not want the tape to be overwritten, execute log-based Device Analysis Test instead.

- Execute Media Assessment Test with StorageWorks Library and Tape Tools (This is a read-only test).

[?] The back-up of tape drive cannot be completed without problem.

- Execute Drive Assessment Test with StorageWorks Library and Tape Tools.

Important

If you execute Drive Assessment Test, the tape is overwritten. If you do not want the tape to be overwritten, execute log-based Device Analysis Test instead.

- Check the back-up log.
- Check whether the constitution used is supported.
- Check the followings and confirm whether the media is not damaged.
 - Whether the position of label is right
 - Whether the reader pin is damaged, left out or becomes loose
 - Whether there is damage on the joint of cartridge
 - Whether the device is used under wrong circumstances
- Check the problems of software.
 - Check your back-up software.
 - Check whether the execution of virus scan software is scheduled when back-up is executed.
- Check whether a tape can be formatted.
- Check whether the media used has a proper product number.
- Using StorageWorks Library and Tape Tools, extract Support Ticket.
 - Look for problems in Cartridge STATUS Section.
 - Look for problems in Drive STATUS Section.

- Check whether Tape Error LED is on.
 1. Reload the tape that might be the cause of trouble. If the blink of Tape Error LED stops, there is no trouble.
 2. Load a new tape or a tape with which no trouble is confirmed. If the blink of Tape Error LED stops, there is no trouble.
 3. Reload the tape that might be the cause of trouble. In case Tape Error LED blinks, you should judge the tape is damaged and dispose it.
- Dispose the media used under the circumstance whose temperature is over 45°C or below 5°C.

[?] Nothing is displayed for 60 seconds or longer after the server is switched on.

- Check whether the power cord of monitor is connected to a properly functioning electrical outlet with an earth.
- Turn on the monitor and check that the power light is on and electricity is supplied to the monitor.
- Check whether the monitor is connected to a targeted server or a console switch via cable.
- Check the following connections to confirm there are not any poor connections.
 - In case you use a rack-mount type server, check the cable connected to the console switch. In addition, check whether the switch is properly configured for the server. There may be a case that you need to connect the monitor directly to the server to check that the console switch is not damaged.
 - In case you use a tower type server, check the connections of cables from the monitor to the sever and from the server to the outlet.
 - In case you use a blade, check that SUV cable of c-Class blade is connected to VGA cable of the monitor and to the connector at the front of blade
- Press any key or enter your password and wait a while until the screen becomes active. Then check that the power saver feature is not enabled.
- Check that additional power is not needed for the action of PCIe device or the graphic controller.
- Check that any video expansion board is not added instead of an on-board video. In case a video expansion board is added, there is a case that the video looks not to be functioning. Remove the video cable from the on-board video and connect the cable to the video jack on the expansion board.

Note

In all servers, in case any video expansion board is installed, an on-board video becomes disabled automatically.

- Press any key or enter your password, and wait a while until the screen becomes active. Then check that the power-on password feature is not enabled. In addition, you can check whether the power-on password is valid according to whether the key-shaped icon is displayed on the screen when POST is completed. In case you do not know your password, you should make the power-on password invalid using the password disabling switch on the motherboard.
- In case a video expansion board is installed to the slot compatible with PCI hot plug, check the power lamp of slot to confirm electricity is supplied to the slot.
- Check that the video expansion board is supported on the server and OS.
- Check that the driver of video is up to date.

[?] The monitor does not function properly when the power saver feature is used.

- Check that the power saver feature is supported by the monitor. If it is not supported, make the feature disabled.

[?] The colors of video are not displayed properly on the monitor.

- Check that 15 pin VGA cable is firmly connected to the proper VGA port of the server and the monitor.
- Check that the monitor and the console switch are compatible with the VGA output of the server.
- Check that the VGA cable is not damaged. Use the cable which confirmed to be functioning.

[?] Slow moving horizontal lines are displayed on the monitor.

- Check that electromagnetic interference has not occurred. Move the monitor away from other monitors or transformers.

[?] The mouse and keyboard does not operate properly.

- Check the followings to confirm there are not any poor connections.
 - In case you use a console switching device, you should check that the server is properly connected to the switch.
 - In case you use a rack-type server, check the cable to the switch box. In addition, check that the switch is properly configured for the server.
 - In case you use a tower-type server, check the connection of cable connecting the input device and the server.
- In case you use a console switching device, check that all the cables and connectors have proper length and are supported by the switches. Refer to the document of switch.
- Check whether the latest driver for operating system is installed.
- Change the device driver and confirm the device driver is not broken.
- Restart the system and after the server is rebooted, check whether the input devices functions properly.
- Change the device to an equivalent device (another mouse or keyboard of same type) whose action is confirmed.
 - In case any problems occur even with a new mouse or a keyboard, the connector board of system I/O board is damaged. Replace the board.
 - If you do not find any troubles, the previous input device is damaged. Change the device.
- Check that the keyboard and mouse are connected to the proper ports. Check that the LED on the keyboard blinks or NumLock LED lights during POST. In case you cannot observe that, change the connection port.
- Check that the keyboard and mouse are not dirty.

[?] Recovery method is required from the system while you change an expansion board on a server encrypted by BitLocker.

- In case you change an expansion board on a server encrypted by BitLocker, disable BitLocker before changing the expansion board. If you do not make BitLocker disabled, System requires the recovery method that was selected when BitLocker was configured. If you cannot enter one or more proper recovery passwords, you will become unable to access all the encrypted data. Enable BitLocker after the installment is finished.

[?] Network Controller or LOM Card does not operate.

- Check the LED on Network Controller or that of LOM Card to confirm whether there is a status showing the cause of trouble.
- Check that there are no poor connections.
- Check that a proper kind of cable suitable for the network speed or that a proper SFP or DAC cable is used. In case you use 10GB network device of dual port, the type of media (DAC cable, equivalent SPF+ module, etc.) should be same on both sides of SFP ports. Mixed use of different SFPs (SR/LR) on one device is not supported.
- Change the network cable to another cable which is proved to run properly to confirm the network cable functions properly.
- Check that the problem of software is not the cause of malfunction.
- Check that the server and the operating system support the controller.
- In System Utility, check that Controller is enabled.
- Check that the server's ROM is the latest version.
- Check that the controller's driver is the latest version.
- Check that a valid IP address is given to the controller and the configuration is proper.

[?] Network controller or LOM card has become unable to operate.

- Check the LED on Network controller or that of LOM Card to confirm whether there is a status showing the cause of trouble.
- Check that a proper network driver for the controller is installed and the driver file is not broken. Re-install the driver.
- Check that there are no poor connections.
- Change the network cable to another cable which is proved to run properly to confirm the network cable functions properly.
- Check that the network controller or LOM card is not damaged.

[?] Network controller or LOM Card has stopped operating after the addition of expansion board to the server.

- Check that there are no poor connections.
- Check that the server and the operating system support the controller.
- In case you install a new expansion board, you should re-install network driver not to change the configuration of the server.
 1. From the operating system, uninstall the network controller driver of a controller which does not function.
 2. Reboot the server and execute the suitable option of System Utility. Check that the server can recognize the controller and the controller can use the resource.
 3. Reboot the server and re-install the network driver again.
- Check that a suitable driver is installed.
- Check that the parameters of the driver match with the configuration of the network controller.

[?] A problem has occurred on the network inter connect blade.

- Check that the network inter connect blade is properly attached and connected.

[?] During POST process, the controller is not displayed or an error is displayed.

- Check that the controller is supported by the server.
- Check that the controller is properly connected and fixed.
- Check that the cable is properly connected.
- In case that the controller is physically damaged, replace it.
- In case the controller is recognized by system BIOS, re-install the controller.
- Execute the diagnosis of controller and follow the procedure displayed.
- Update the firmware to the latest version.
- Download Active Health System log.

[?] The duplication of controller has been lost (an error is not displayed during POST process or cache has been disabled).

- Check that the controller is supported by the server.
- Check that the controllers are properly connected and fixed.
- Check that the cable is properly connected.
- In case that the controller is physically damaged, replace it.
- Execute the diagnosis of controller and follow the procedure displayed.
- Check that the controllers are compatible models.
- Check that the cache sizes of controllers are compatible.
- Check that Flash Backup Unit (FBU) is properly installed and connected.
- Update the firmware to the latest version.
- Download Active Health System log.

[?] A POST Error message or an IML message will be registered on an arbitrary server where the Flash Backup Unit (FBU) is configured for the Smart Array Controller

- Check that Flash Backup Unit (FBU) is properly installed.
- Confirm whether Flash Backup Unit (FBU) is fully charged.
- Update the system ROM.

[?] An error, retry, time-out, or a drive error not included in the guarantee occurs when an old Mini-SAS cable is used.

- The product life cycle of Mini-SAS connector is 250 times of connection/disconnection (outer, inner and cable Mini-SAS connector).
- If you use an old Mini-SAS cable whose product life cycle is ending, replace it.

[?] In a connection using SUV cable, a USB device is not recognized, an error message is displayed, or a device cannot be turned on.

- Remove the USB device and execute any of the followings.
 - Connect a USB device which needs less than 500mA of electricity.
 - Connect the USB hub of external power source to the SUV cable and connect the USB device to the hub.

[?] On the flow control of LAN Controller

- In case Flow Control is set to "Auto Negotiation", "Rx & Tx Enabled", "Tx Enabled" or "transmission enabled", or "transmission/reception enabled", when the packet processing of OS stops in the state of heavy reception load due to system hang etc., PauseFrame might be transmitted continuously. In such cases, due to massive pile-up of packets at the switch side, the buffer within the switch becomes scarce and all communication devices connected to the switch may be affected. In order to avoid such cases, set Flow Control to "Disabled" or "Invalid".

5.7 Problem of OS Operation

[?] Windows operation is unstable

- ☐ Have you installed Starter Pack?
 - See "*Installation Guide (Windows)*" to install Starter Pack.
 - If you restore the Windows from a backup tool, Starter Pack is needed to install again.

[?] Cannot turn the power OFF at the blue screen (STOP error screen)

- Perform the forced shutdown (continue to press the power switch at least four seconds) to turn off the server.

[?] Unable to connect to a network

- ☐ Is the cable connected properly?
 - Securely connect the proper cable to the network port on the rear of the server. Additionally, make sure that the cable conforms to the network interface standards.
- ☐ Are BIOS settings correct?
 - With System Utility, you can set the internal network controller to disabled. Check the BIOS settings with Setup Utility.
- ☐ Have you completed protocol and services settings?
 - Confirm that the network driver for the server has been installed and various settings, such as TCP/IP protocol, have been properly specified.
- ☐ Are transfer rate settings correct?
 - Confirm that the transfer rate and duplex mode are the same as those of the connecting hubs.

[?] OS stops

- Using a latest virus scan utility, scan viruses.
- Check the event log.
- Check IML.
- In order that you can check when needs emerge, collect the information on NMI crash dump.
- Acquire Active Health System Log and inform the content to your sales representative.

[?] An error message is displayed in the error log

- Follow the information displayed in the error log.

[?] Setting the organization name and owner name in the system

- Edit the following registry. Edit the registry with extreme care.
1. Sign in to Windows that has been installed to this unit with the account for the Administrator right.
 2. Right-click the lower left corner of the screen, click [Run].
 3. Right-click the lower left corner of the screen, click [Run].
 4. Use the registry editor to specify the organization name and owner name in the registry values under two keys described below.
 - HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows NT\CurrentVersion
 - HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Microsoft\Windows NT\CurrentVersion

Name: RegisteredOrganization
Type: REG_SZ
Data: Desired organization name

Name: RegisteredOwner
Type: REG_SZ
Data: Desired owner name
 5. Exit the registry editor.
- Setting the names has been completed.

[?] An unnecessary boot entry is added to UEFI Boot Order during a restore in the backup software

- Delete the unnecessary boot entry by following the steps below.
1. Reboot the system.
 2. Press the <F9> key during POST to enter System Utilities.
 3. Move to System Configuration > BIOS/Platform Configuration (RBSU) > Boot Options > UEFI Boot Settings > Delete Boot Option.
 4. Select the unnecessary boot entry, and delete it by using "Commit changes and Exit".
 5. Select "F12: Save and Exit" and select "OK".

5.8 Problem of Starter Pack DVD

[?] During a firmware update from DVD startup, "Deploy may encounter issues due to the following warning(s)" is displayed and the update stops

- ☐ Is Trusted Platform Module (TPM) installed?
 - Click "Exit" on the message display screen to exit. From System Utilities, Change System Configuration > BIOS/Platform Configuration(RBSU) > Server Security > Trusted Platform Module Options > TPM Visibility to [Hidden], and retry.

[?] Unable to read the manuals

- ☐ Have you installed Adobe Reader to your computer?
 - To read the manuals, install Adobe Reader in your computer.
- ☐ Is an error message "Internet Explorer has stopped" displayed?
 - Close the dialog box and continue the operation. When the same error message appears again, double-click "version.xml" under the root directory of the DVD, and choose Yes in the dialog box.

[?] The menu item of Integrated Installation is gray

- ☐ Is your system environment suitable?
 - To run Integrated Installation, log on to the Windows on the server with an administrative account.

[?] The menu is displayed with a wrong language

- ☐ Is your system environment suitable?
 - Confirm the settings of **Regional and Language Options**. Specify the language settings of each tab to **English (US)**.

5.9 Problem of Software

[?] The installer is displayed by a wrong language or resulted in an error

- ☐ Is your system environment correct?
 - Confirm the settings of **Regional and Language Options**. Set the language settings of each tab to **English (US)**.

[?] The problem of NEC ESMPRO ServerAgentService (for Windows)

- For details of NEC ESMPRO ServerAgentService (for Windows), see *NEC ESMPRO ServerAgentService Installation Guide (Windows)* in Starter Pack.

[?] The problem of NEC ESMPRO Manager

- For details of NEC ESMPRO Manager, see *NEC ESMPRO Manager Installation Guide* or online help.

5.10 Problem of Optical Disk Drive

[?] Unable to access or play CD, DVD and other optical disks

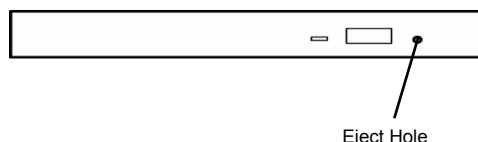
- ☐ Is the disk properly set in the optical disk drive tray?
 - There is a holder in the tray to secure the disk. Make sure that the disk is securely placed in the holder.

[?] Unable to access or play DVD/CD-ROMs

- ☐ Is the DVD/CD-ROM supported by the server?
 - For a CD with copy guard which does not conform to the CD standard, the playback of such a disk with the optical disk drive is not supported.
 - The DVD/CD-ROM for Macintosh is not supported.

[?] Unable to eject a disk using the eject button

- Eject the disk in the following steps.
 1. Press the power switch to turn off the server (POWER/SLEEP LED is off).
 2. Use a 100 mm long metal pin that is 1.2 mm in diameter (or uncoil a thick paper clip) and insert it into Eject Hole at the front of the tray. Keep pressing slowly until the tray comes out.



- Important**
- Do not use toothpicks, plastic and other fragile pins.
 - If you still cannot eject the disk, contact your sales representative.

3. Pull the tray out with your hands.
4. Remove the disk.
5. Push the tray back to its original position.

[?] Unable to start the system from the CD-ROM or the DVD drive.

- Regarding the drive boot process of System Utility, check that the server is configured to start first from the CD-ROM or the DVD drive.
- Check whether there is a poor connection.
- Check whether the disc is not damaged.
- Check whether the drive is not damaged.
- In case that the OS and the server support boot from USB CD-ROM or DVD drive and boot is possible, check whether legacy support of USB CD-ROM or DVD drive.

[?] Data read out from a CD-ROM or a DVD drive is broken or data cannot be read out.

- If contamination or residue is left on the surface of CD or DVD, clean the drive and the disc. In case a label is attached to the surface of disc, remove the label and the residue of adhesive.
- Check whether the device supports the specification of disc.

[?] Unable to detect a CD-ROM or a DVD drive.

- Check whether there is a poor connection.
- Check whether the drive or the cable is not damaged.
- Update the driver to the latest version.

5.11 Problem of Others

[?] The server loses Serial Number and Product ID.

- If the server loses Serial Number and Product ID, recover them as follows:
 - (1) Power off the server. Then disconnect the plug from the outlet.
 - (2) Wait 30 seconds. Then plug the server into the outlet again.
 - (3) Turn on the server with the POWER button.
 - (4) The server starts up and the POST screen appears.
 - (5) Press the F9 key to enter the System Utilities.

If this fails, initialize the RBSU settings with the system maintenance switch (refer to “Chapter 1 7.4.3 Set the System Configuration Back to Default Values” of the maintenance guide).

 - (6) Check the values of Serial Number and Product ID by selecting the menu of the System Utilities: System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Advanced Service Options.
 - (7) If the values of Serial Number and Product ID are satisfactory, go to step 14.
 - (8) If the values are unexpected or lost, select the menu of the System Utilities: System Configuration > BIOS/Platform Configuration (RBSU) > System Default Options.
 - (9) Select the Restore Default Manufacturing Settings option.
 - (10) Select this option: Yes, restore the default settings.
 - (11) The server restarts automatically and the POST screen appears.
 - (12) Press the F9 key to enter the System Utilities.
 - (13) Set the proper Serial Number and Product ID (indicated on the pull-out tab of the server) via the menu of the System Utilities: System Configuration > BIOS/Platform Configuration (RBSU) > Advanced Options > Advanced Service Options.



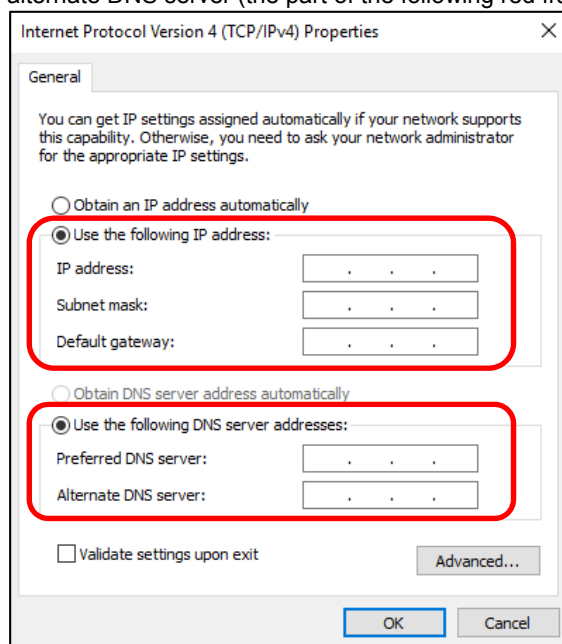
- (14) If the RBSU settings have been changed from the defaults, check and configure the new values.

● Notes for using additional processor kit after setting up Windows Server2012R2/2016.

- 1) When fixed IP address / DNS set for the following option, please add CPU board by the following procedure. (The procedure is necessary for fixed IP address setting after added CPU.)

N8104-182 Dual Port 10GBASE-T Adapter
 N8104-183 Dual Port 10GBASE-T Adapter
 N8104-185 Dual Port 10GBASE SFP+ Adapter
 N8104-187 Dual Port 25GBASE SFP28 Adapter
 PCI Card with PCI-to-PCI bridge

- (a). Change the setting to stop the service which is referred to these options boot automatically. In addition, when these options connect to storage, please remove the LAN cable from these options not to be recognized.
- (b). When setting LAN teaming at these options, please cancel teaming.
- (c). Record IP address of these options /sub netmask / default gateway / preferred DNS server / alternate DNS server (the part of the following red frame.)



- (d). Change the setting of these options IP address to “obtain an IP address automatically”, and change DNS address to “obtain DNS server address automatically.”
- (e). Follow the user’s guide to add CPU board.
- (f). Set IP address/sub netmask/ default gateway/ preferred DNS server/ alternate DNS server, which is recorded in these options procedure C.
- (g). Set LAN teaming again.
- (h). Set up service which is changed setting by procedure a to boot automatically again. When connect these options with storage, connect LAN cable again to recognize the storage.

Tips

If it doesn't follow above procedure, it will display a message as fixed IP address is using by other device and cannot set up fixed IP address.
 In that case, please do the below command on command prompt window, and start the boot device manager. Please click [View] - [Show hidden devices] and expand network adapter tree, and then delete the gray nonpresent device.

```
>set devmgr_show_nonpresent_devices=1
>Start DEVMGMT.MSC
```

- 2) When refer to network of NEC ESMPRO Manager, duplicate network card will be displayed after change CPU processor kit configuration. Please ignore the network device which are not displayed on OS, the detail information of its network device will be displayed “Unknown”.

● Notes for using VMware ESXi

This caution is about the screen display of VMware vSphere : Monitor > Hardware > System Sensor > Sensor when the ESXi is booted.

1. There are cases where the following Heartbeat Lost sensor displays "Warning(Yellow)".
 [Device] I/O Module (n) LOM_Link_P(n) : Heartbeat Lost-Assert
 [Device] I/O Module (n) NIC_Link_P(n) : Heartbeat Lost-Assert
 *n represents LAN port number P1-P4

 <Environment iLO5 firmware : 1.40 or latest is applied>
 In case that the screen display of Heartbeat Lost sensor Health(vCenter : Status) shows "Warning(Yellow)" after ESXi completes boot, the "Warning(Yellow)" will disappear and turn to "Normal(Green)" within a couple of minutes. Please wait for a couple of minutes.
2. In case of non-redundant FAN configuration, there are cases where the screen display of following sensor Health(vCenter : Status) shows "Warning(Yellow)" after ESXi completes boot, This "Warning(Yellow)" does not indicate hardware malfunction and there is no impact to the system operation.
 - Cooling Unit 1 Fans
3. There are some cases where the screen display of following sensor Health(vCenter : Status) shows " ? " after ESXi completes boot, this does not indicate hardware malfunction and there is no impact to the system operation.
 - System Chassis 1 UID

● Caution for the case where Admin Password is set from system utility(*1), or the case where the setting "Require Host Authentication" is enabled from iLO web interface(*2).

(*1) "System Configuration > BIOS/Platform Configuration (RBSU) > Server Security"

Set password by "Set Admin Password option"

(*2) This caution is for iLO firmware version 1.40 or higher.

Set "Require Host Authentication" Enabled in "Security > Access setting > iLO"

When the setting described above is executed, the following symptoms are expected

- Many messages "Remote Insight/ Integrated Lights-Out Unauthorized Login Attempts" are displayed in alert viewer.
- Error occurs, when Starter Pack(Standard Program package) is applied.

The following services and functions are not supported

- Report services for hardware faults in Express Report Service
- Report services in RAID Report Service
- Server diagnosis function in Server Diagnostic Karte
- Function to display Device information and configuration collected by iLO
- Function to collect event logs collected by iLO

- **Notes for using Linux OS**

Please use device name of LOM/Option NIC, which recognized automatically by OS.

Please do not change or fix the option NIC device name that based on PCI address when customizing udev rule. In addition, please do not use storage device name including PCI address that is located on /dev/disk/by-path/.

Please do not change the CPU configuration and add/remove cards into/from the PCI slot when using a device name based on the PCI address. Changes of PCI bus address information have an influence on the name of a device connected via PCI. As a result, access to network or storage may become impossible, and the system may not start normally.

6. Windows System Recovery

Recover the Windows system by using the following instructions if the system does not work normally.

Note

- After recovering the system, be sure to install each driver and Standard Program Package.
See "*Installation Guide (Windows)*" to install Standard Program Package and device drivers.
- If the Windows system cannot find hard disk drives, you cannot recover the Windows system.

6.1 Recovery of Windows Server 2019

If the Windows does not start normally, you can recover it using the feature of the Windows installation disc. To run this feature, start the installation disc, and then choose **Repair your computer** in **Windows Setup** wizard. We recommend that this option is performed by the system administrator.

If the RAID controller driver is required, take the following steps:

Note

In case you use an on-board RAID controller and an internal optical disc drive, load the driver from a removable media.
Copy the following folder from Starter Pack DVD to a removable media beforehand.
`<DVD>:\software\006\drivers\sw_raid1_driver`

1. Turn on the power to the display and this server in that order or restart.
Set the OS install media.
2. Press <F11> key during POST to start Boot Menu.
In **One-Time Boot Menu**, select the optical disc drive to which OS install media is set.
3. Start the OS from the OS installation media.
The message "Press any key to boot from CD or DVD..." appears on the upper part of the screen.
To boot from the media, press the <Enter> key.
While boot-up proceeds, the message "Loading files..." appears.
4. Choose **Repair your computer** in **Windows Setup** wizard.
5. Click **Troubleshoot**.
6. Click **Command Prompt**.
7. After setting Starter Pack DVD to the drive, execute the following command to load the driver:

For on-board RAID controller:

```
drvload <DVD>:\software\006\drivers\sw_raid1_driver\SmartDQ.inf
```

Tips

- In case you use an on-board RAID controller or an internal optical disc drive, load the driver from a removable media.
`drvload <Removable Media>:\sw_raid1_driver\SmartDQ.inf`
- The volume label for each drive can be checked from the display result of the `dir` command.
Example: `dir C:\`

8. Exit the command prompt.

6.2 Recovery of Windows Server 2016 / Windows Server 2012 R2

If the Windows does not start normally, you can recover it using the feature of the Windows installation disc. To run this feature, start the installation disc, and then choose **Repair your computer** in **Windows Setup** wizard. We recommend that this option is performed by the system administrator.

If the RAID controller driver is required, take the following steps:

Note

In case you use an on-board RAID controller and an internal optical disc drive, load the driver from a removable media. Copy the following folder from Starter Pack DVD to a removable media beforehand.

```
<DVD>:\software\006\drivers\sw_raid1_driver
```

1. Turn on the power to the display and this server in that order or restart. Set the OS install media.
2. Press <F11> key during POST to start Boot Menu. In **One-Time Boot Menu**, select the optical disc drive to which OS install media is set.
3. Start the OS from the OS installation media. The message "Press any key to boot from CD or DVD..." appears on the upper part of the screen. To boot from the media, press the <Enter> key. While boot-up proceeds, the message "Loading files..." appears.
4. Choose **Repair your computer** in **Windows Setup** wizard.
5. Click **Troubleshoot**.
6. Click **Command Prompt**.
7. After setting Starter Pack DVD to the drive, execute the following command to load the driver:

For on-board RAID controller:

```
drvload <DVD>:\software\006\drivers\sw_raid1_driver\SmartDQ.inf
```

Tips

In case you use an on-board RAID controller or an internal optical disc drive, load the driver from a removable media.

```
drvload <Removable Media>:\sw_raid1_driver\SmartDQ.inf
```

For RAID controller (N8103-189/190/191/192/193/194/195/201)

```
drvload <DVD>:\software\001\drivers\dac1_driver\SmartPqi.inf
```

Tips

The volume label for each drive can be checked from the display result of the dir command.

Example: **dir C:**

8. Exit the command prompt.

The driver installation is completed.

7. Resetting and Clearing the Server

See this section if the server does not work or if you want to set the system settings back to the default settings.

7.1 Software Reset

In case POST processing stops and does not operate, or the server stops during the start-up of System Utility, press <Delete> key while pressing <Ctrl> key and <Alt> key. Clear all the data in progress that are stored in the memory and restart.

7.2 Forced Shutdown

In case you cannot turn off the power in the following situations, press the power switch of device for 4 seconds or longer. You can forcefully turn off the power.

- Unable to turn off the power although you have executed the shutdown from OS.
- Unable to turn off the power although you have pressed the POWER switch.

Regarding the position of POWER switch, see *Chapter 1 (4.2 Front View (Without Front Bezel))* in *User's Guide*.

Note

If you want to turn on the power again, do so after you wait for 30 seconds or longer.

7.3 Resetting iLO

You can manually start a reset of iLO by using the UID switch on the front.

- When you press and hold the UID switch for 5 to 9 seconds, a safe restart of iLO starts.
- When you press and hold the UID switch for 10 seconds or longer, a hardware restart of iLO starts.

For details, refer to iLO 5 User's Guide.

Important

Do not restart iLO during the time from when the server starts up until the OS startup is completed (including the execution of POST (Power On Self Test)). Also, do not restart iLO during System Utilities operations.

7.4 Initialization of System Configuration Information

7.4.1 Description on the Features of System Maintenance Switch

Here we describe the features of system maintenance switch of the server.

Table: Detailed Features of System Maintenance Switch

Position	Default	Configuration	Features
SW1 *1, *5	OFF	OFF	Set to OFF usually.
		ON	Set the security of iLO5 to disabled.
SW2	OFF	Reserved	—
SW3	OFF	Reserved	—
SW4	OFF	Reserved	—
SW5 *2, 5	OFF	OFF	Set to OFF usually.
		ON	Clears power-on password and administrator password.
SW6 *3, *5	OFF	OFF	Set to OFF usually.
		ON	Set the system configuration back to the default values. *4
SW7	OFF	Reserved	—
SW8	OFF	Reserved	—
SW9	OFF	Reserved	—
SW10	OFF	Reserved	—
SW11	OFF	Reserved	—
SW12	OFF	Reserved	—

Important Do not change the system maintenance switch that says “Reserved” unless it is instructed by the document. It may cause the trouble or malfunction of device.

*1 Set SW1 to ON in the following cases.

- When the passwords of all the users which administrator authority is given of iLO5 have become unknown
- When you change the feature of iLO5 from disabled to enabled

*2 Regarding the operation procedure of SW5, see *Chapter 2 (7.4.4 Clearing a Password)* of this document.

*3 Regarding the operation procedure of SW6, see *Chapter 2 (7.4.3 Set the System Configuration Back to Default Values)*.

*4 Default values may be different from the factory preset.

*5 When you set SW1, SW5, and SW6 to ON at the same time, boot with the backup ROM.

7.4.2 Operation Procedure of System Maintenance Switch

When you operate the system maintenance switch, follow the procedure below.

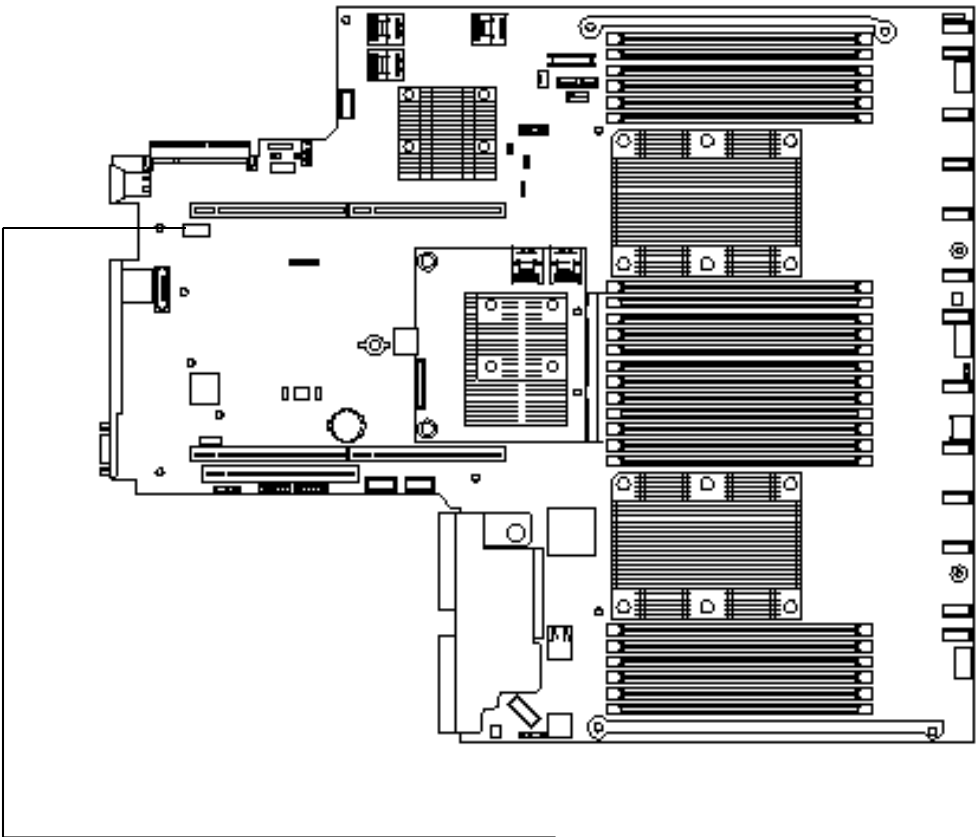
1. Check the position of the system maintenance switch: SWx (x stands for the number of the switch).
2. Regarding the positions of system maintenance switch, refer to the following diagram of R120h-2M or R120h-1M.
3. Referring to *Chapter 2 (1.2 Overview of Installation and Removal)* in *User's Guide* attached to the device, remove the top cover.
4. In case you cannot operate the system maintenance switch because of an option board installed, remove the riser cage by referring to *Chapter 2 (1.11 Riser Card)* in *User's Guide*.
5. Change the system maintenance switch you want to operate to ON or OFF.

Important Referring to *Chapter 1 (1.8 Measures against Electrostatic Discharge)* in “For the Safe Use”, work caring for electrostatic discharge.

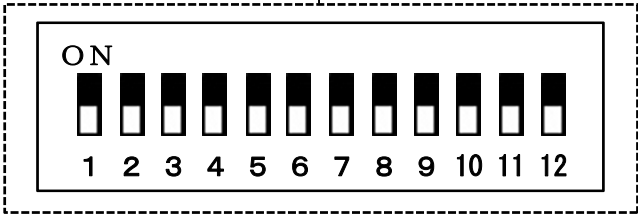
Important When you handle the system maintenance switch, use a sharp tool such as a pointed toothpick or tweezers (however, avoid ones with sharp edges) and slide it horizontally to the direction of your handling. Do not operate with a mechanical pencil.

6. Assemble the parts you removed to the original state, and then connect the power cord.

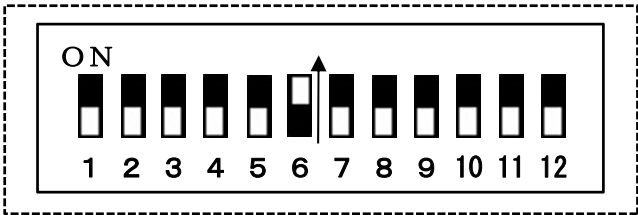
R120h-2M



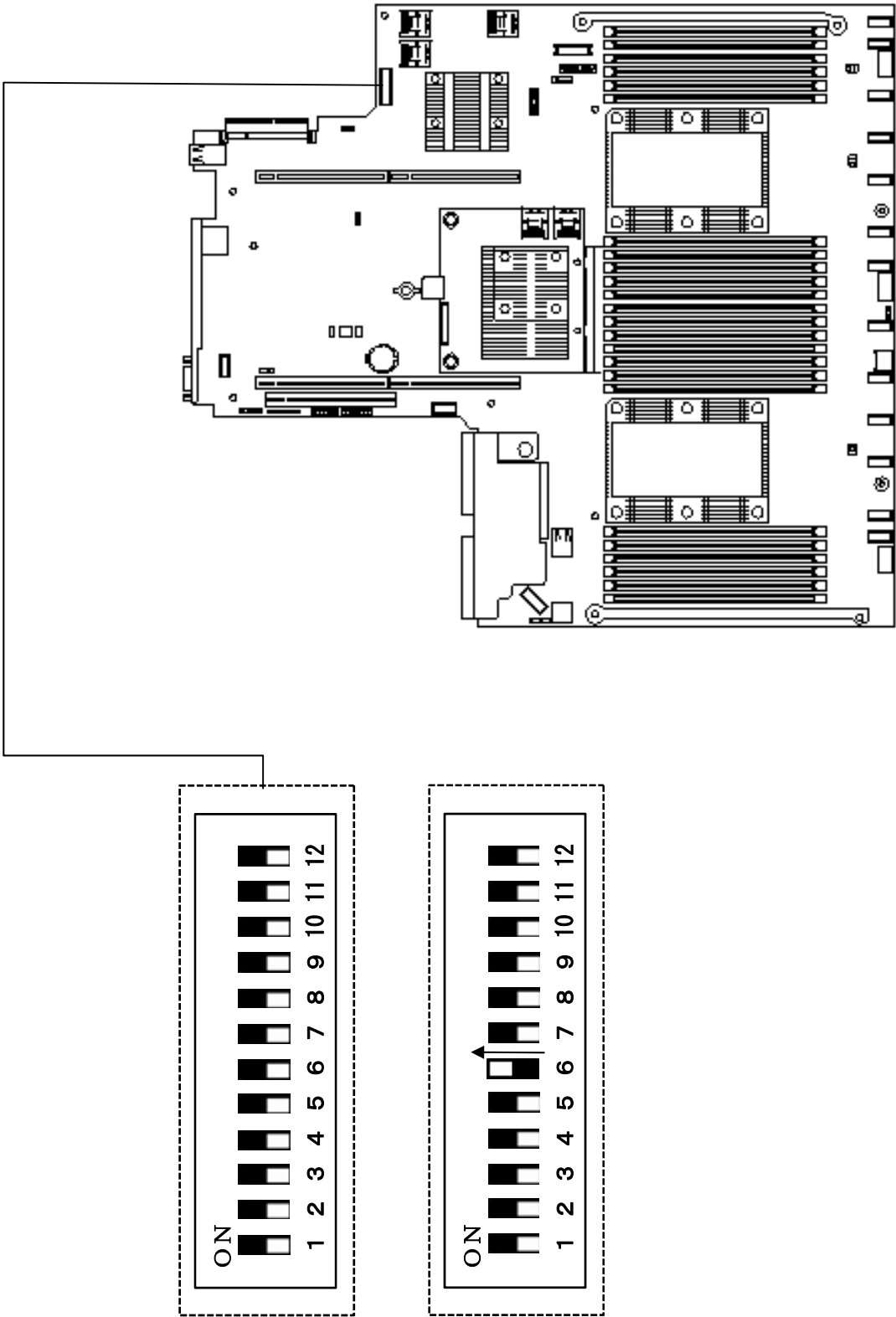
In case all the switches are OFF (default)



(Ex.) In case you changed only SW6 to ON



R120h-1M



In case all the switches are OFF (default)

(Ex.) In case you changed only SW6 to ON

7.4.3 Set the System Configuration Back to Default Values

In case the device cannot be started due to the change of system configuration etc., you can initialize the system configuration by operating the system maintenance switch SW6 on the motherboard. It has the same function as the Restore Default Manufacturing Settings in the System Default Options menu. For more details, please refer to *Chapter 1 (1. System Utilities) of Maintenance Guide (Common)*.

The operation procedure of system maintenance switch SW6 is as follows.

1. Follow *Chapter 1 (7.4.2 Operation Procedure of System Maintenance Switch)* of this document to change the system maintenance switch: SW6 to ON.
2. Press POWER Switch to turn on the power.
3. After about 10 seconds, the following message is displayed.
Maintenance switch detected in the On position.
The System is being default configured. This may take a few minutes...
4. Then after about 20 seconds, the following message is displayed.
Power off the server and toggle the maintenance switch to the Off position.
5. Keep pressing POWER Switch for longer than 4 seconds to turn off the power forcibly.
6. Follow *Chapter 1 (7.4.2 Operation Procedure of System Maintenance Switch)* of this document to set the system maintenance switch: SW6 back to OFF.
7. Press POWER Switch to turn on the power.
8. The following error message is displayed during POST.
267 – IMPORTANT: Default configuration settings have been restored at the request of the user.
Action: Restore any desired configuration settings which differ from defaults.
9. Press <F9> key to start System Utility.
10. In **System Default Options** menu, select **Restore Default Manufacturing Settings** and set it to **Yes, restore the default settings**.
11. A dialog that says **[Question] Do you want to reboot the system?** appears.
12. If you select **OK**, the device restarts.

Tips

When you start the device after initializing the system configuration, the device may restart during POST.

Tips

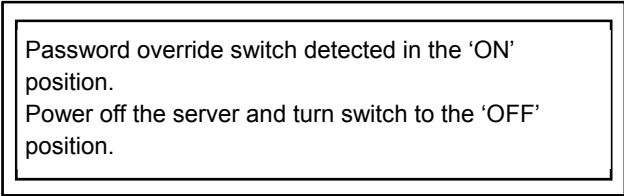
You can set the system configuration back to the default values when SW6 is ON, but Power On Password and Administrator Password are not included.

7.4.4 Clearing a Password

In case you forget a password to log in System Utility or Power On Password, you can clear passwords by operating the system maintenance switch SW5.

To operate the system maintenance switch SW5, follow the procedure below.

1. Turn the system maintenance switch: SW5 into ON in accordance with *Chapter 1 (7.4.2 Operating Procedure of System Maintenance Switch)* in this manual
2. Press POWER Switch to turn on the power.
3. Press the <F9> key during POST execution.
4. The following message is displayed on the screen and then POST will be stopped.



Password override switch detected in the 'ON' position.
Power off the server and turn switch to the 'OFF' position.

5. When POST stops, press the POWER switch to turn the power OFF.
6. Turn the system maintenance switch: SW5 into OFF again in accordance with *Chapter 1 (7.4.2 Operating Procedure of System Maintenance Switch)* in this manual.

Tips

If the <F9> key is not pressed, POST will proceed normally without displaying the message. However, the password will be cleared. In that case, turn off the power after waiting until POST is completed.

7. Press POWER Switch to turn on the power.

NEC Express5800 Series Express5800/R120h-1M, R120h-2M

2

Useful Features

This chapter explains useful features of this product. Refer to it when necessary.

1. System Utilities

This section explains how to configure the system and details the parameters.

2. RAID System Configuration

This section explains the RAID configuration utility built in this machine.

3. Details of EXPRESSBUILDER

This section explains EXPRESSBUILDER, which comes with this machine.

4. Details of Starter Pack

This section details Starter Pack.

5. iLO 5

This section explains iLO 5.

6. NEC ESMPRO

This section explains NEC ESMPRO, an application for management and monitoring.

7. NEC Product Info Collection Utility

This section explains the NEC Product Info Collection Utility.

8. Smart Storage Administrator

This section explains Smart Storage Administrator.

9. Express Report Service / Express Report Service (HTTPS)

This section explains Express Report Service and Express Report Service (HTTPS), which automatically report failure information about this machine.

10. Express Report Service (MG)

This section explains Express Report Service and Express Report Service (MG), which automatically report failure information about this machine.

***1.* System Utilities**

System Utilities are built into System ROM and provide boot order configuration instructions, diagnostics functions for detecting system errors, and log collection functions for quick analysis in case of system failure, in addition to system information display functions and device configuration functions.

For parameter lists and factory settings of System Utilities, refer to *"1. System Utilities" in Chapter1 of "Maintenance Guide (Common)"*.

2. RAID System Configuration

Use HPE Smart Array S100i Software RAID Configuration Utility to configure RAID, such as creating virtual drives and make a hot spare. Refer to following sections for detail of its operation. You can also configure RAID by Smart Storage Administrator. Refer to a document for detail that *Smart Storage Administrator User's Guide* which is uploaded on the following ftp site.

<https://www.58support.nec.co.jp/global/download/>

-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

When building a RAID system with an optional RAID controller, refer to "N8103-189/190/191/192/193/194/195/196/201 RAID Controller N8103-198/203/215 Battery Backup Unit N8103-218/219 Flash Backup Unit User's Guide" which is uploaded on the following site.

<https://www.58support.nec.co.jp/global/download/>

-[Server Options]

Tips

- The screen image used in this chapter is an example and may not be the same as your server.
- The menu may be changed depending on the firmware and BIOS version. The menu may be changed based on the firmware and BIOS version. The content of each menu item can be viewed by selecting the item with pressing F1 Help key.

2.1 Start HPE Smart Array S100i Utility

Use the System Utilities to start the HPE Smart Array S100i Utility.

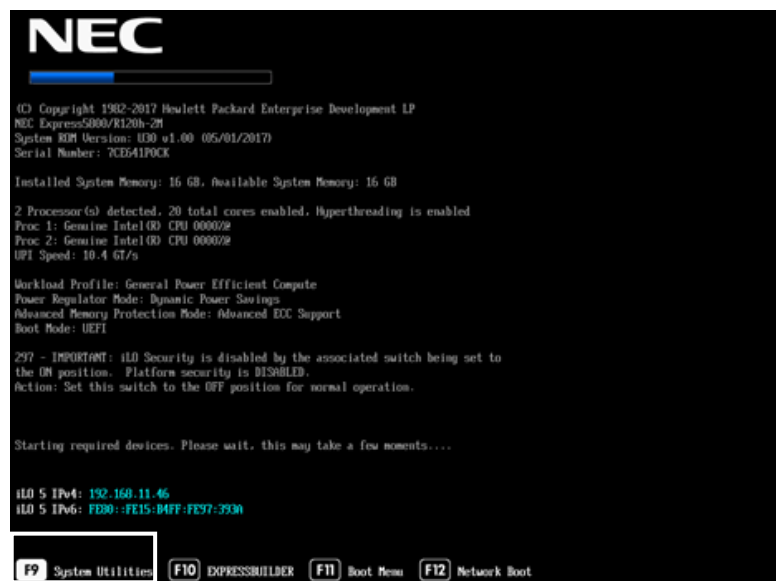
Step1

Turn on the server and wait for POST to proceed.

After a while, the following message appears at the bottom left of the screen.

F9 System Utilities

If you press the < F9 > key, SETUP starts upon completion of POST and the System Utilities menu is displayed.



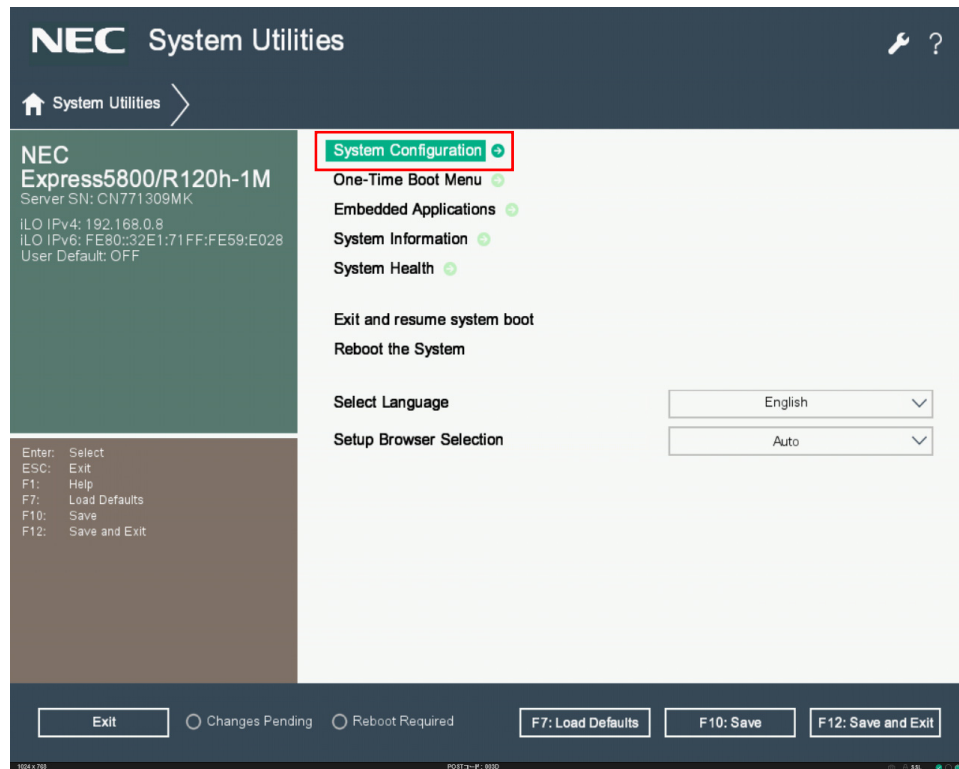
Tips

Please note that the white color background of F9 means the function is selected, if it's not turn to white color after you pressed the button, wait for a moment of system initialization.

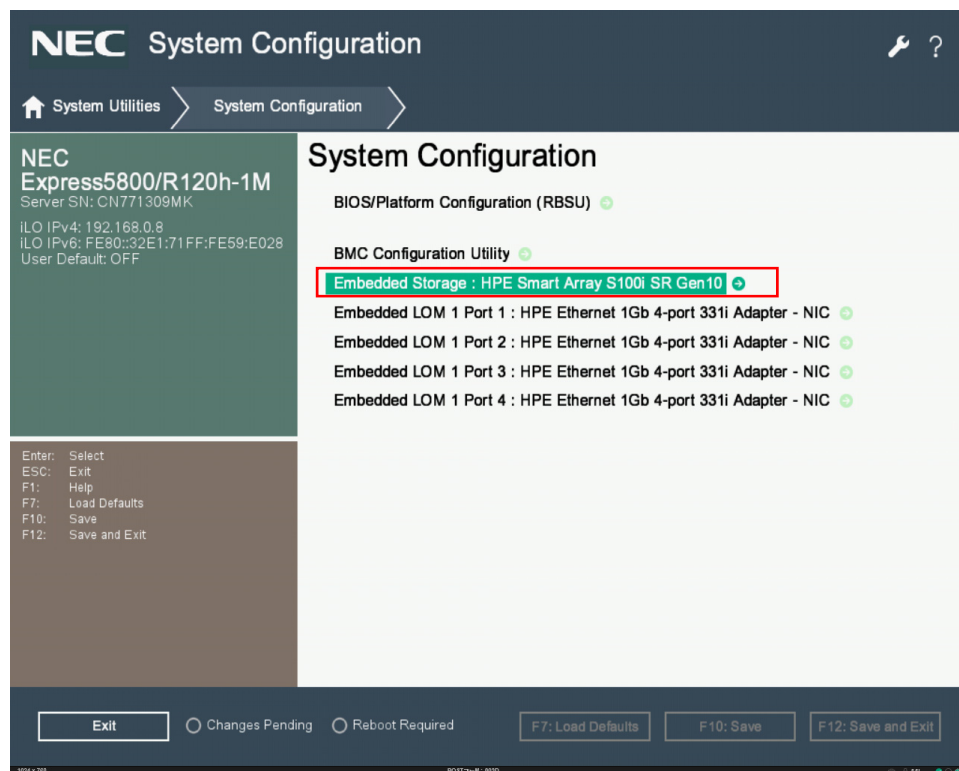
Step2

The **System Utilities** menu appears.

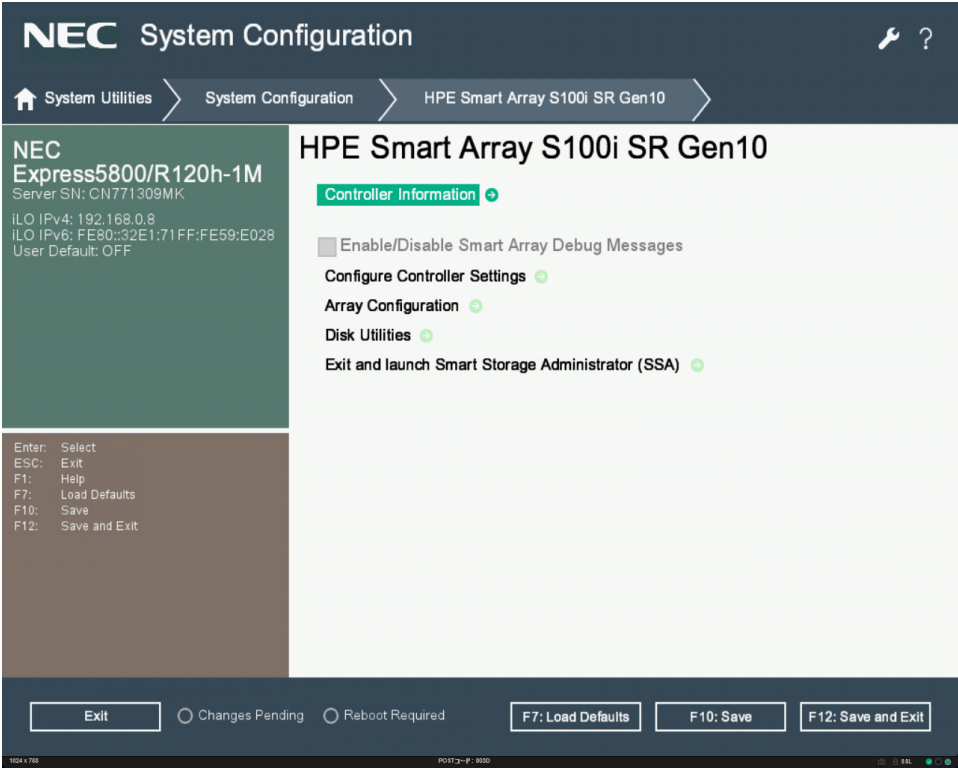
If you select **System Configuration**, the following submenu appears.



Select **Embedded Storage: HPE Smart Array S100i SR Gen10** and press the <Enter> key.

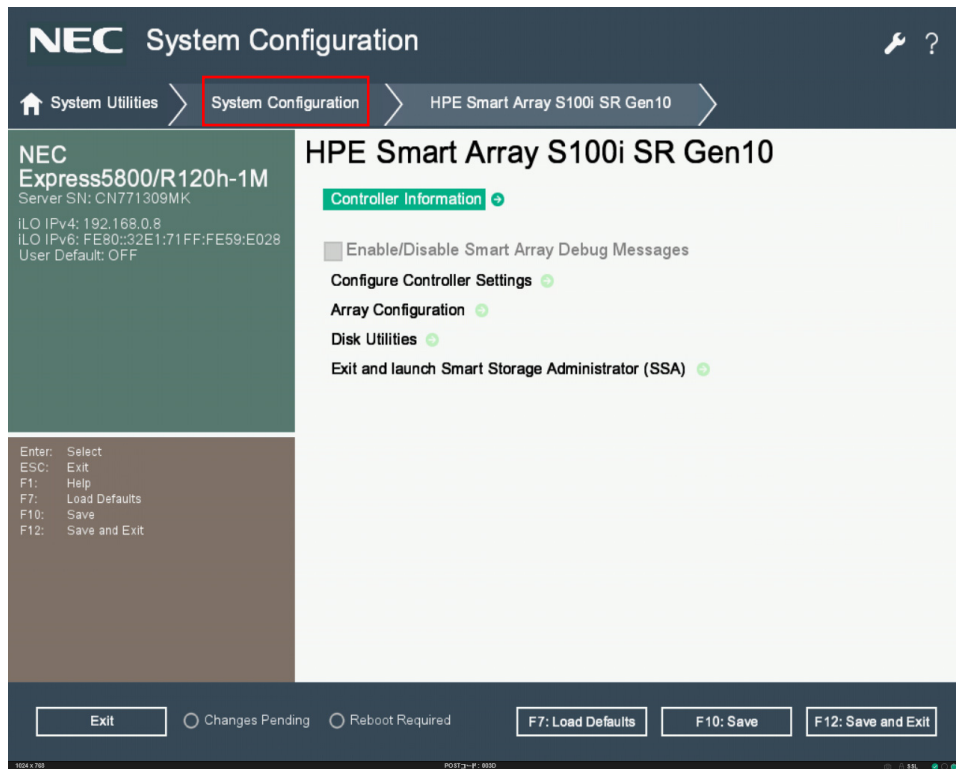


The following HPE Smart Array S100i SR Gen10 submenu appears.

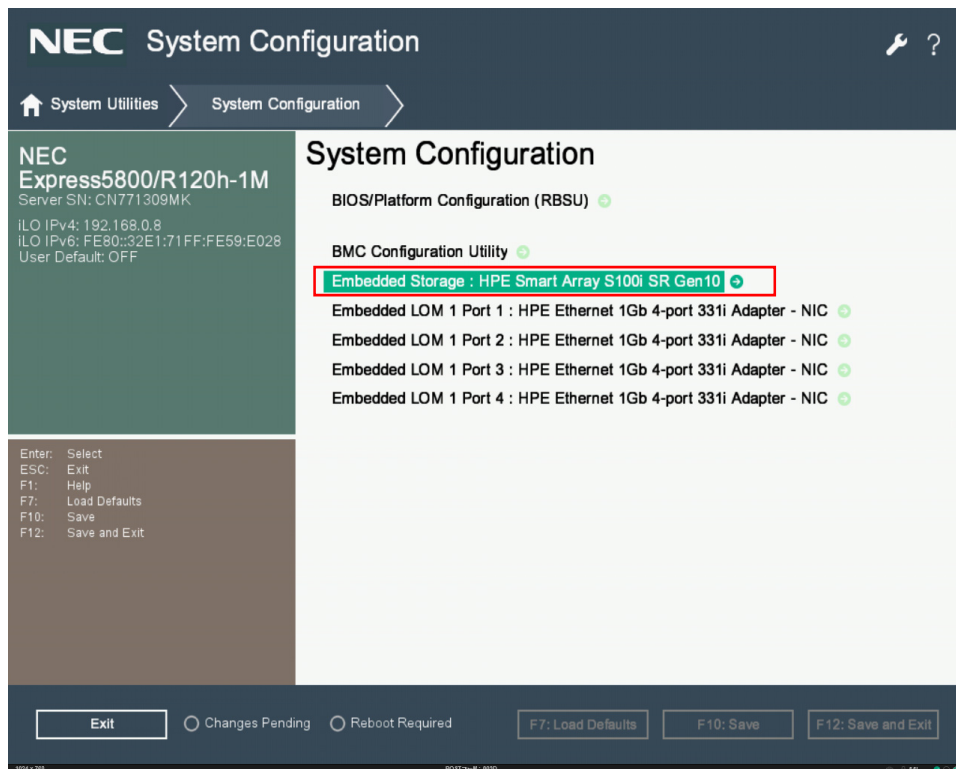


2.2 Exit HPE Smart Array S100i Utility

To quit the utility, press the **<Esc>** key a few times or click the top of selection as below figure red square indicated.



When the following screen appears, the HPE Smart Array S100i Utilities is exited.



2.3 Menu Tree of HPE Smart Array S100i Utility

Menu	Default Value	Descriptions
Controller Information		
Controller	HPE Smart Array S100 SR Gen10	Controller Information
Device ID		PCIe device ID
PCI Slot number		PCIe Slot number
Firmware version		Firmware version
Firmware release date		Firmware release date
UEFI Driver version		UEFI Driver version
UEFI Driver release date		UEFI Driver release date
Configuration Summary		Summary of disk and array information
Configure Controller Settings		
> Modify Controller Settings		
Rebuild Priority	High	Priority at which the logical drives are rebuilt from the failed state. It can be low, medium, medium high or high.
Surface Scan Analysis Priority	3	0:Disable. 31:High. 1-31:Idle(with delay). Modifies the amount of delay/idle time of the controller before the surface scan analysis is resumed again.
Current Parallel Surface Scan Count	1	Set the maximum number of surface scans that can run at the same time. Setting 1 disables the feature.
Spare Activation Mode	Failure Spare Activation	Option to change between the failure or predictive spare activation modes.
Physical Drive Write Cache State	Disabled	Option for enabling the write cache on the physical drives.
> Advanced Controller Settings		
Physical Drive Request Elevator Sort	Enabled	Enable or disable the physical drive cache write elevator sort algorithm.
Monitor and Performance Analysis Delay	60	0-1440: input range. 60: Default. Set the monitor and performance analysis delay.
HDD Flexible Latency Optimization	Disabled	Enable or Disable the flexible Latency scheduler to limit the high latency request from the HDDs.

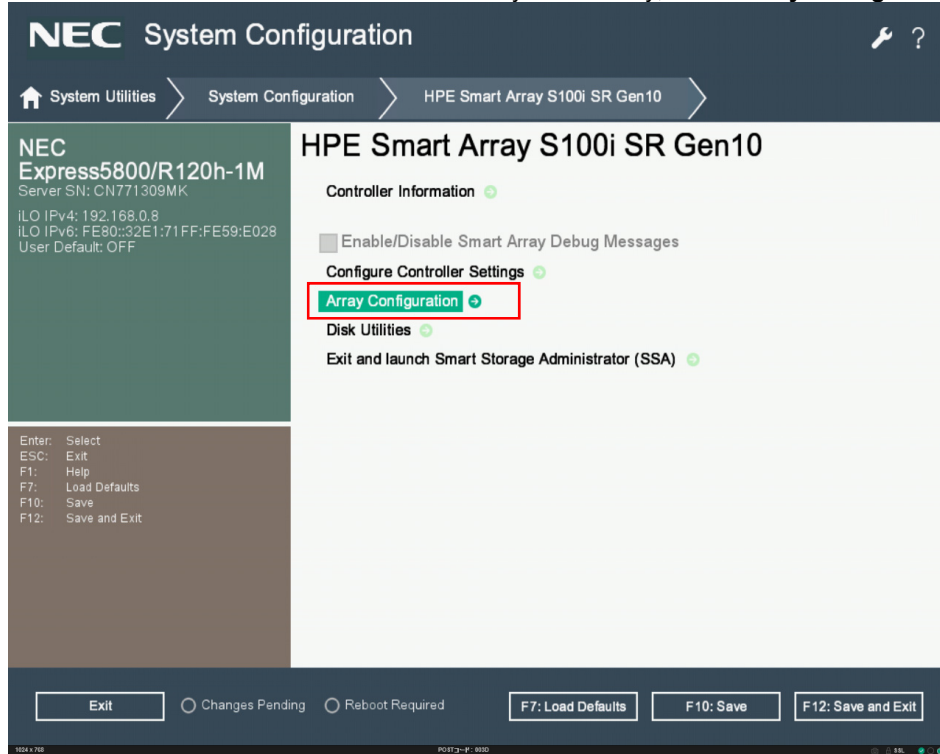
Menu	Default Value	Descriptions
> Clear Configuration		
Delete All Array Configurations		Delete all the array present in the controller and the data present in the arrays will be lost.
Delete configuration metadata on all physical drives		Delete RAID metadata on the drives which are not part of array.
Array Configuration		
> Create Array		
RAID Level		RAID Level
Logical Drive Label		Enter Alphabets and Numbers
Stripe Size /Full Stripe Size	256KiB/256KiB	Strip size is the amount of data that is stored on each physical drive in the array. The full stripe size is the amount of data that the controller can read or write simultaneously on all the drives in the array. For RAID levels that support fault tolerance through parity, the parity information is calculated one full strip size at a time.
Size		Enter the value in decimal. The minimum RAID size is 16 MiB.
Unit Size		Logical Drive Unit Size (MiB/GiB/TiB)
Acceleration Method	HPE SSD Smart Path	Logical drive acceleration method. Only SSD can select it. For HDD, the value is "None".

Menu	Default Value	Descriptions
> Manage Array		
> List Logical Drives		Display the list of logical unit.
- Logical Drive Details		Display the detail of logical unit.
- Edit Logical Drive		Edit the properties of logical unit
- Delete Logical Drive		Delete logical unit
> Create Logical Drive		Create logical unit
> HPE SSD Smart Path Settings		Display only for SSD. Setup HPE SSD Smart Path.
> Manage Spare Drives		Create / delete spare drive
- Assign Dedicated Spare		Drives assigned as dedicated spares can only be used as spare drives.
- Assign Auto Replace Spare		When drives assigned as auto replace, it will automatically become part of the array.
> Identify Device		Turn On/Off the device identification LED
Identification Duration (Seconds)	86400	Device LED identification Duration in seconds: 1-86400: input range. 86400:Default
Identify by Drive Configuration type	Data drive	Select the identification target device
Start		Start to turn on the device identification LED
Stop		Stop to turn on the device identification LED
Delete Array		Delete all array information and meta data
Disk Utilities		
> Device Information		Provide the information related to the particular device
> Identify Device		Turn On/Off the device identification LED
Identification Duration (Seconds)	86400	Device LED identification Duration in seconds: 1-86400: input range. 86400:Default
Start		Start to turn on the device identification LED
Stop		Stop to turn on the device identification LED
Exit and launch Smart Storage Administrator (SSA)		

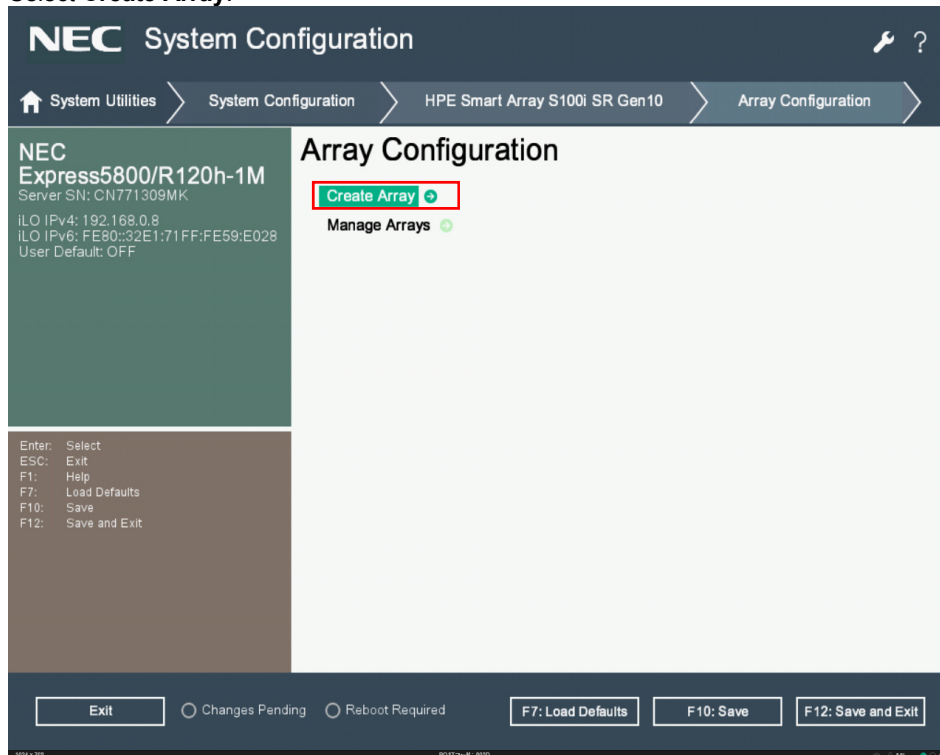
2.4 Procedures for Using Configuration Utility

2.4.1 Create configuration

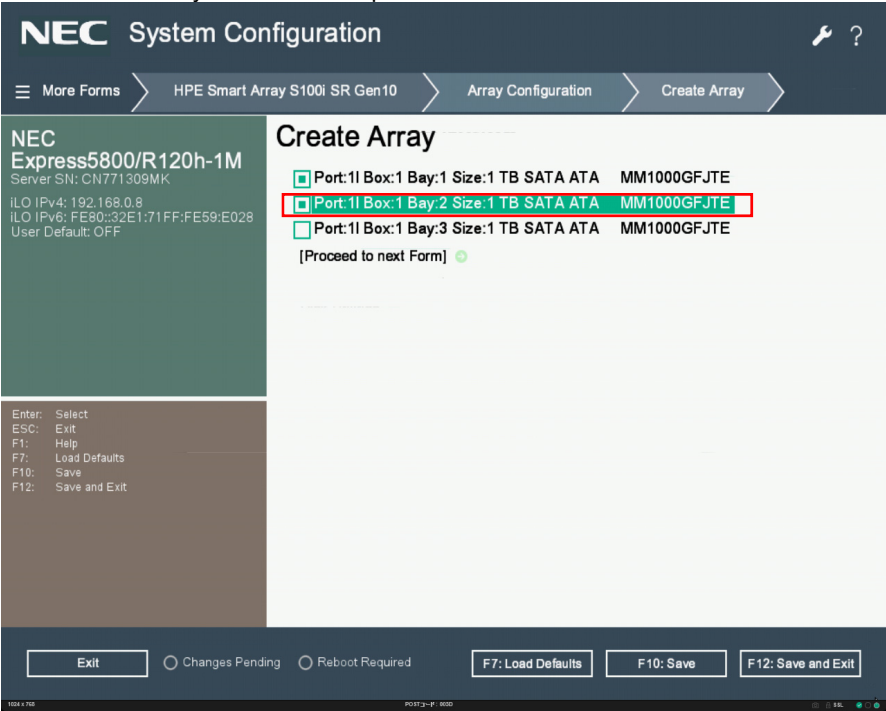
1. Run HPE Smart Array S100i Utility.
2. From the TOP menu screen of HPE Smart Array S100i Utility, select **Array Configuration**.



3. Select **Create Array**.

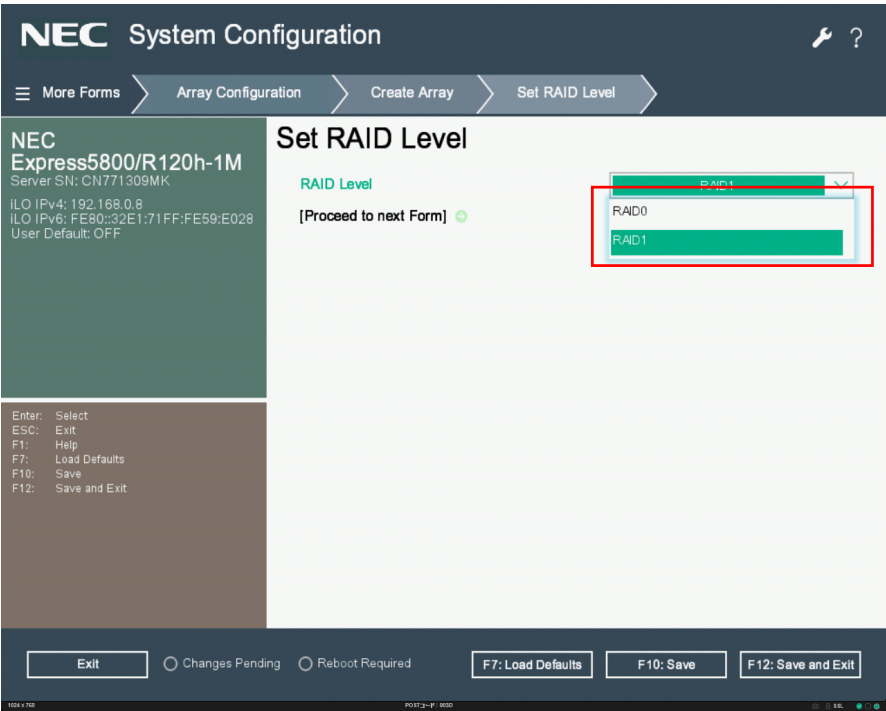


4. Select drives that you needed and proceed to next form.



5. **Set RAID Level** on the following screen, select the RAID level (RAID0 or RAID1) then proceed to next form.

Important Although the [RAID 5] selection screen may be displayed, [RAID 5] is not supported on this server.



6. Set the parameter of settings as shown below .Click the **Submit Changes** once finished the settings.

NEC System Configuration

More Forms > Create Array > Set RAID Level > Set Logical Drive Configuration

NEC Express5800/R120h-1M
 Server SN: CN771309MK
 iLO IP v4: 192.168.0.8
 iLO IP v6: FE80::32E1:71FF:FE59:E028
 User Default: OFF

Set Logical Drive Configuration

Logical Drive Label: Logical Drive 1

Strip Size / Full Stripe Size: 256 KiB / 256 KiB

Size: 931.481

Unit Size: GiB

Acceleration Method: None

[Submit Changes]

Enter: Select
 ESC: Exit
 F1: Help
 F7: Load Defaults
 F10: Save
 F12: Save and Exit

Exit | Changes Pending | Reboot Required | F7: Load Defaults | F10: Save | F12: Save and Exit

2.4.2 Rebuild

1. Replace a physical device, and then rebuild operation will automatically start.
2. The rebuilding is under running as below figures. (Status: Rebuilding)

NEC System Configuration

More Forms > List Logical Drives > Logical Drive 1 (Logical Drive 1) > Logical Drive Details

NEC Express5800/R120h-1M
 Server SN: CN771309MK
 iLO IP v4: 0.0.0.0
 iLO IP v6: FE80::32E1:71FF:FE59:E028
 User Default: OFF

Logical Drive Details

Status: **Rebuilding**

Operation Progress: 0%

Size: 931.4 GiB(1 TB)

RAID Level: RAID1

Legacy Disk Geometry(C/H/S): 65535/255/32

Strip Size: 256 KiB

Full Stripe Size: 256 KiB

Logical Drive Label: Logical Drive 1

Acceleration Method: None

Logical Drive Members:
 Port:11 Box:1 Bay:1 Size:931.5 GiB(1 TB) SATA ATA MM1000GFJTE Status:Ok

Port:11 Box:1 Bay:2 Size:931.5 GiB(1 TB) SATA ATA MM1000GFJTE Status:Rebuilding

Enter: Select
 ESC: Exit
 F1: Help
 F7: Load Defaults
 F10: Save
 F12: Save and Exit

Exit | Changes Pending | Reboot Required | F7: Load Defaults | F10: Save | F12: Save and Exit

Tips

The progress of rebuilding should be checked in SSA (Smart Storage Administrator) under OS.

2.4.3 Configure HotSpare

There are two kinds of Hot Spare Management Modes as the followings.

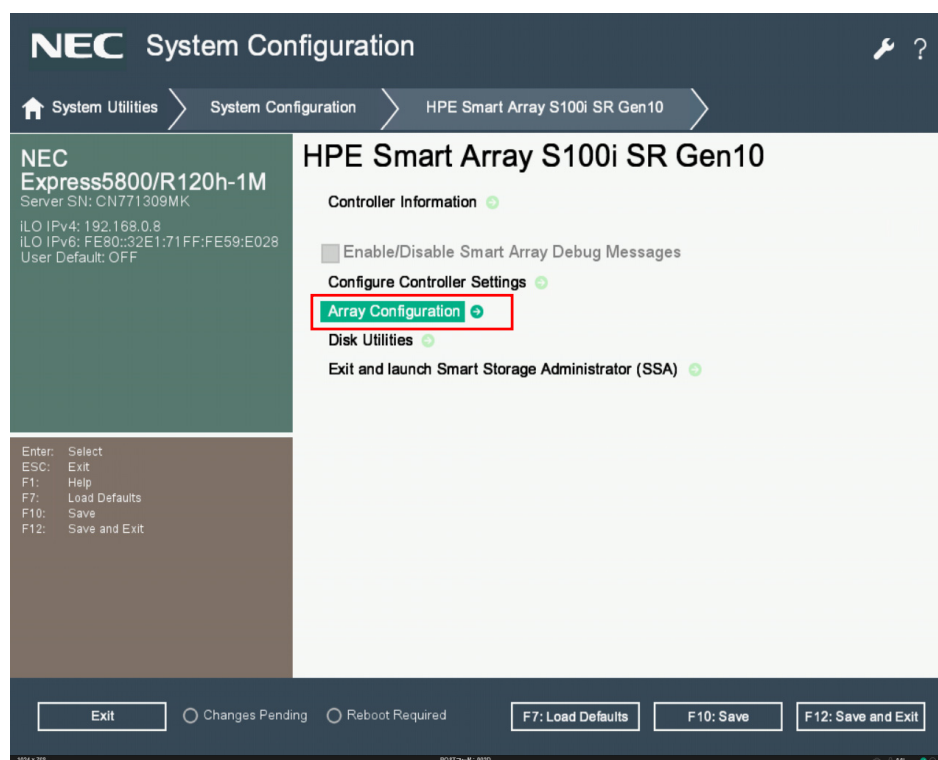
- **Dedicated Spare**
Once a failed drive is replaced, copyback will be executed. Therefore, the slot of the spare drive is no change.
- **Auto Replace Spare**
An autoreplace spare replaces a failed drive to be incorporated into the target array instead. Once a failed drive is replaced, it automatically becomes a hot spare, copyback will not be executed. Therefore, the slot of the replaced physical device becomes the slot of the spare drive.

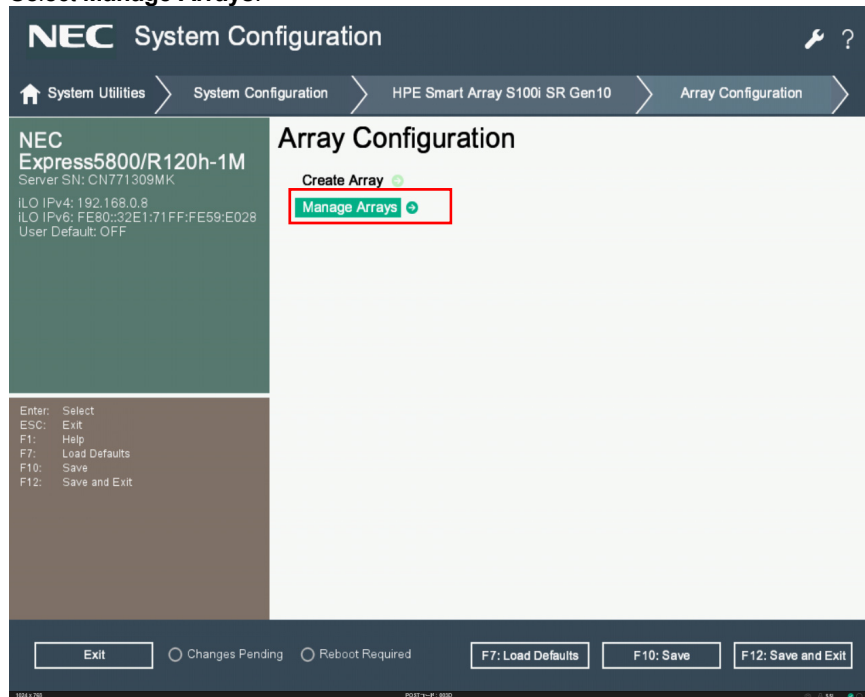
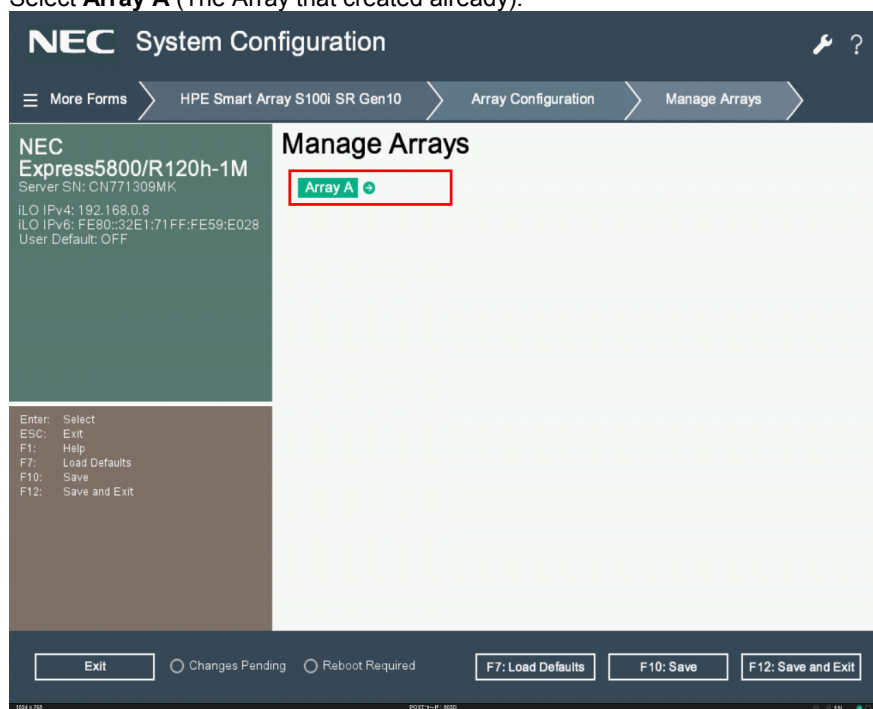
(1) Assign Dedicated Spare

1. Connect a physical device for hot sparing, and then turn on the server.
2. Run HPE Smart Array S100i Utility.

On the TOP menu screen of HPE Smart Array S100i utility, select **Array Configuration**

The following screen appears.



3. Select **Manage Arrays**.4. Select **Array A** (The Array that created already).

5. Select **Manage Spare Drives**.

The screenshot shows the NEC System Configuration utility interface. The top navigation bar includes 'More Forms', 'Smart Array Controller', 'Array Configuration', 'Manage Arrays', and 'Array A'. The left sidebar displays server information for 'NEC Express5800/R120h-1M' (Server SN: CN771309MK) and a list of keyboard shortcuts (Enter: Select, ESC: Exit, F1: Help, F7: Load Defaults, F10: Save, F12: Save and Exit). The main area is titled 'Array A' and lists several options: 'Array Type', 'List Logical Drives', 'Create Logical Drive', 'Manage Spare Drives' (highlighted with a red box), 'Identify Device', and 'Delete Array'. At the bottom, there are buttons for 'Exit', 'F7: Load Defaults', 'F10: Save', and 'F12: Save and Exit', along with status indicators for 'Changes Pending' and 'Reboot Required'.

6. Select **Assign Dedicated Spare**.

The screenshot shows the NEC System Configuration utility interface, specifically the 'Manage Spare Drives' screen. The top navigation bar includes 'More Forms', 'Array Configuration', 'Manage Arrays', 'Array A', and 'Manage Spare Drives'. The left sidebar displays server information for 'NEC Express5800/R120h-1M' (Server SN: CN771309MK) and a list of keyboard shortcuts (Enter: Select, ESC: Exit, F1: Help, F7: Load Defaults, F10: Save, F12: Save and Exit). The main area is titled 'Manage Spare Drives' and lists two options: 'Assign Dedicated Spare' (highlighted with a red box) and 'Assign Auto Replace Spare'. At the bottom, there are buttons for 'Exit', 'F7: Load Defaults', 'F10: Save', and 'F12: Save and Exit', along with status indicators for 'Changes Pending' and 'Reboot Required'.

7. Select the available drive then press **Assigned Dedicated Spare**.

The screenshot shows the 'NEC System Configuration' interface. The breadcrumb trail is: More Forms > Manage Arrays > Array A > Manage Spare Drives > Assign Dedicated Spare. The left sidebar displays server information for 'NEC Express5800/R120h-1M' (Server SN: CN771309MK) and a list of keyboard shortcuts (Enter: Select, ESC: Exit, F1: Help, F7: Load Defaults, F10: Save, F12: Save and Exit). The main area is titled 'Assign Dedicated Spare' and shows a table with one row:

<input checked="" type="checkbox"/>	Port:1l	Box:1	Bay:3	Size:1 TB	SATA ATA	MM1000GFJTE
-------------------------------------	---------	-------	-------	-----------	----------	-------------

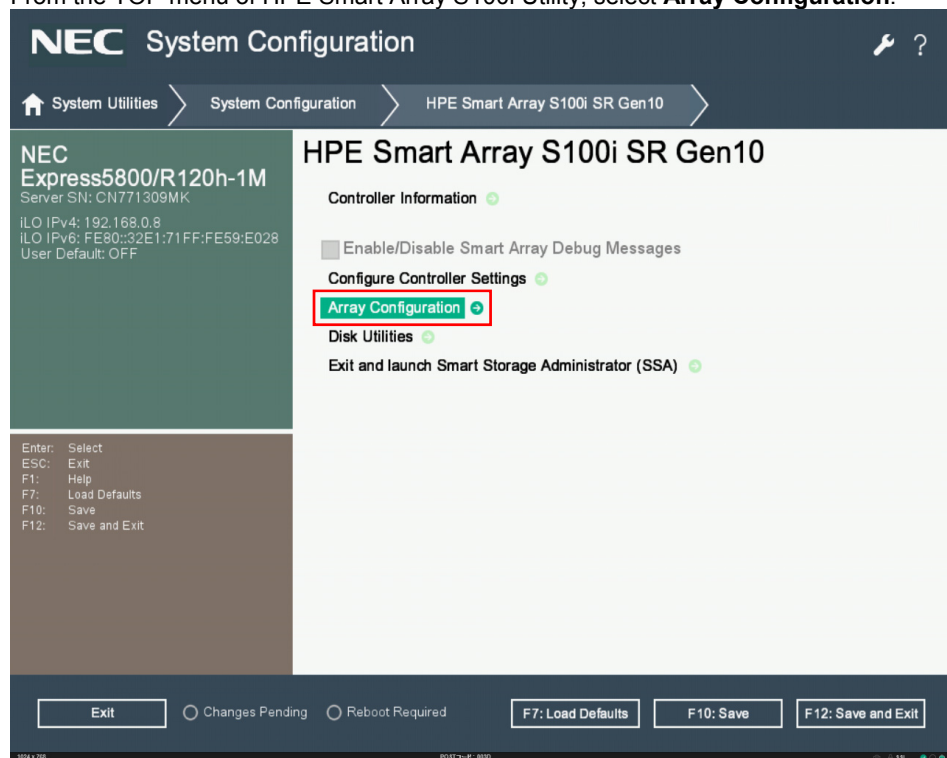
 Below the table is a green 'Assign Dedicated Spare' button. At the bottom, there are buttons for 'Exit', 'F7: Load Defaults', 'F10: Save', and 'F12: Save and Exit', along with status indicators for 'Changes Pending' and 'Reboot Required'.

8. The successful message appeared as below figure.

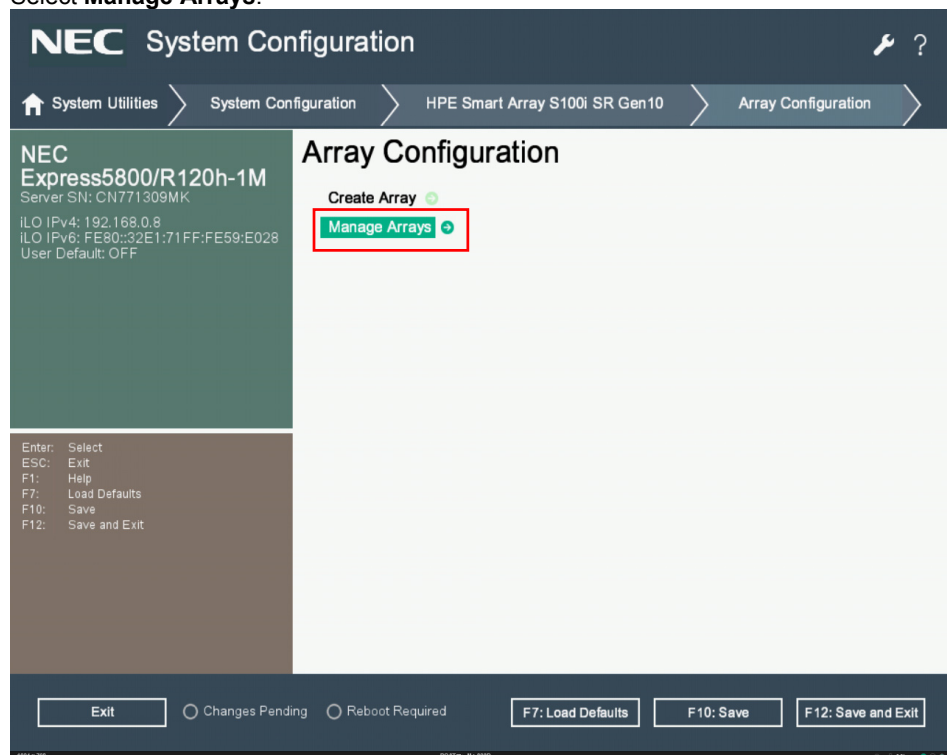
The screenshot shows the 'NEC System Configuration' interface after the 'Assign Dedicated Spare' step. The breadcrumb trail is: More Forms > Array A > Manage Spare Drives > Assign Dedicated Spare > Submit. The left sidebar is identical to the previous screenshot. The main area is titled 'Submit' and displays a green message box: 'Adding of Spare Successful'. Below the message is a green button labeled '[Back to Main Menu]'. At the bottom, the 'Exit' button is highlighted, and the 'Changes Pending' status indicator is now active (orange circle).

9. Check the logical drive has a spare member that added before.

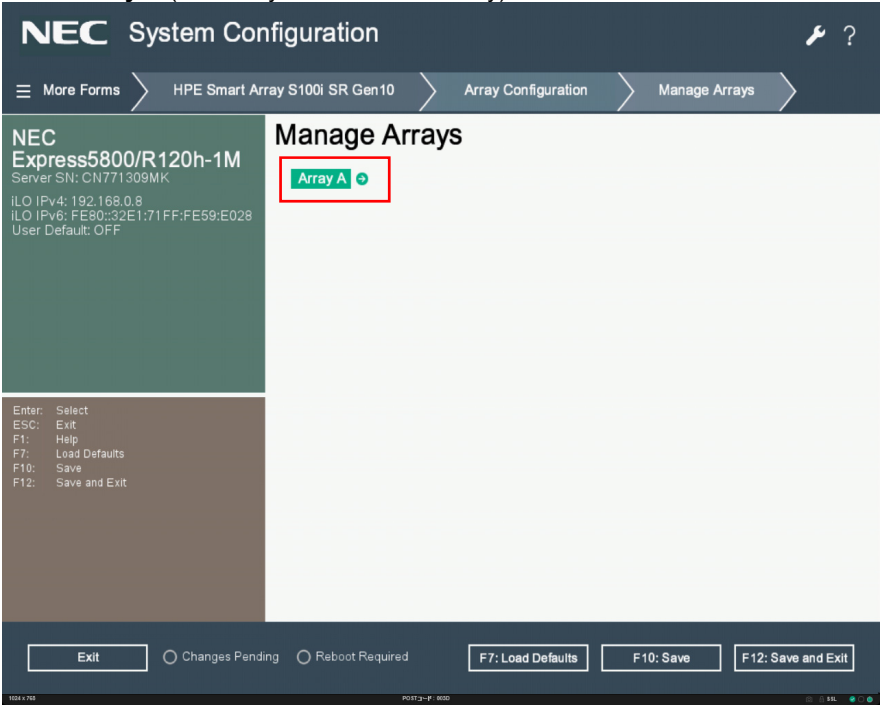
① From the TOP menu of HPE Smart Array S100i Utility, select **Array Configuration**.



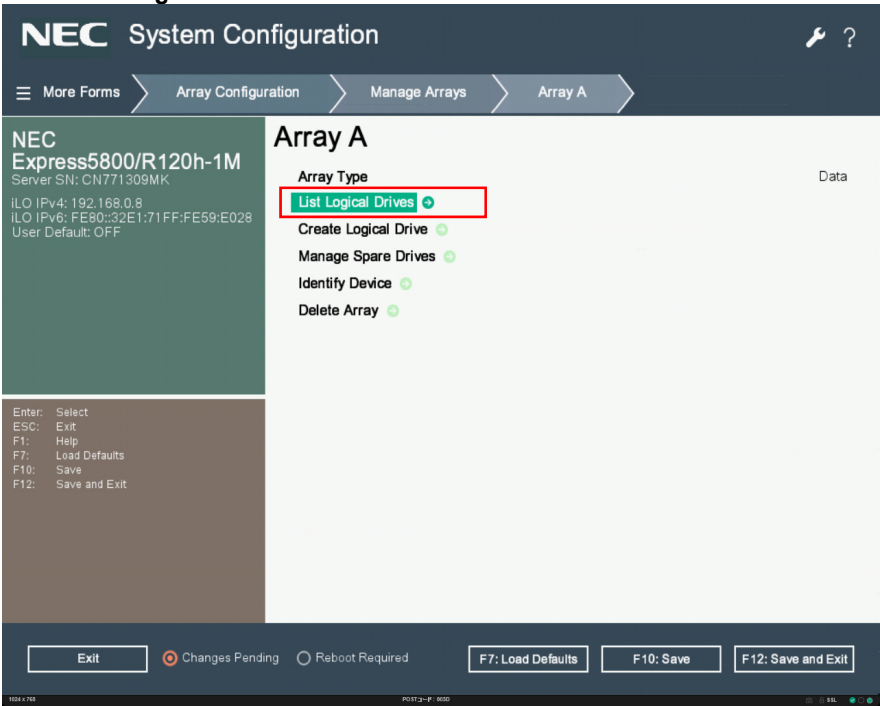
② Select **Manage Arrays**.

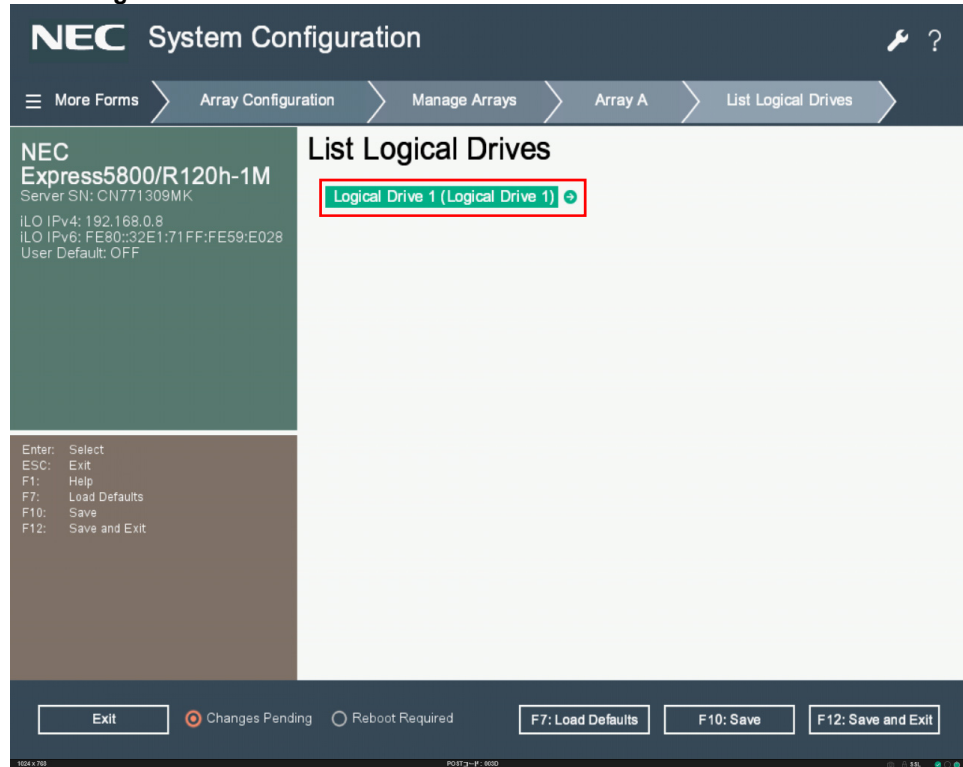
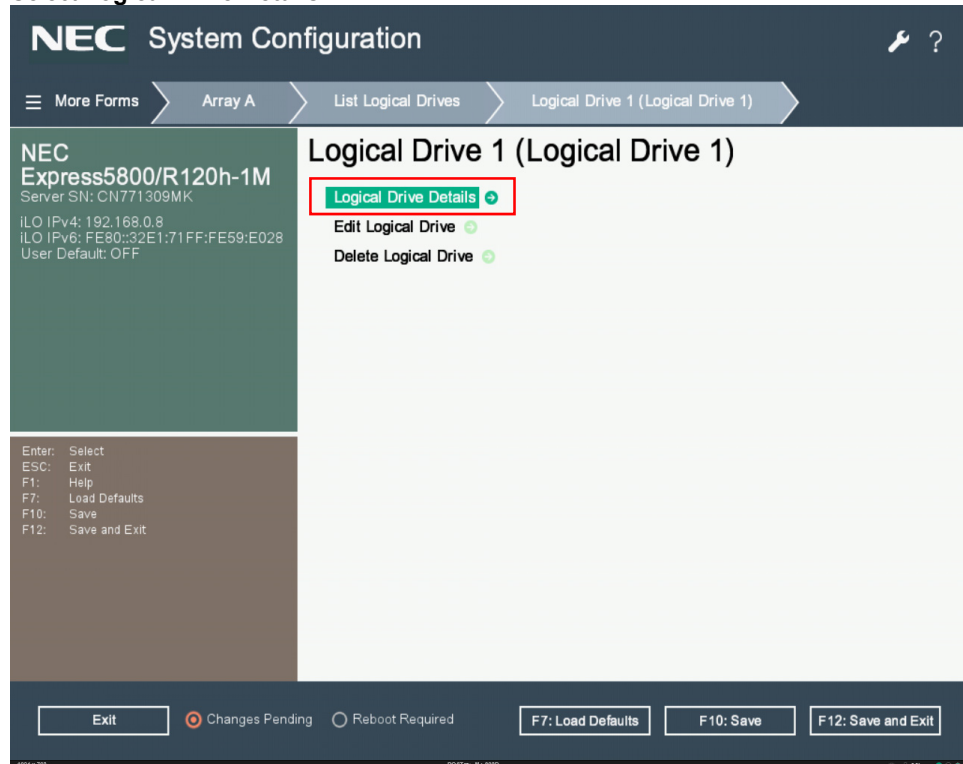


③ Select **Array A** (The array that created already).

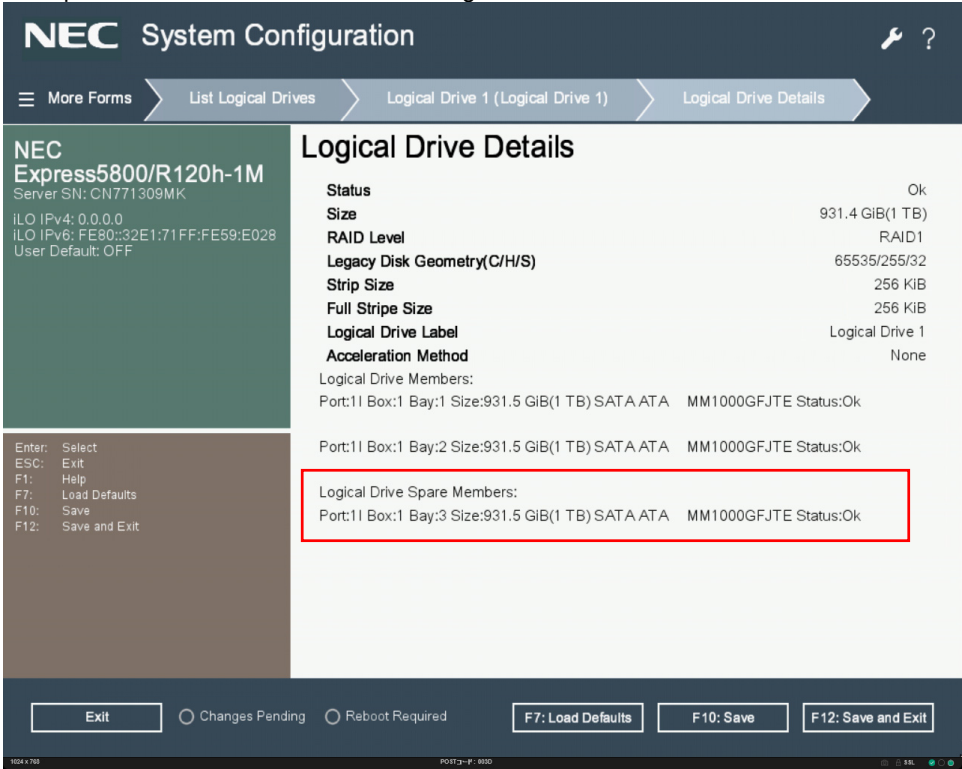


④ Select **List Logical Drives**.



⑤ Select **Logical Drive 1**.⑥ Select **Logical Drive Details**.

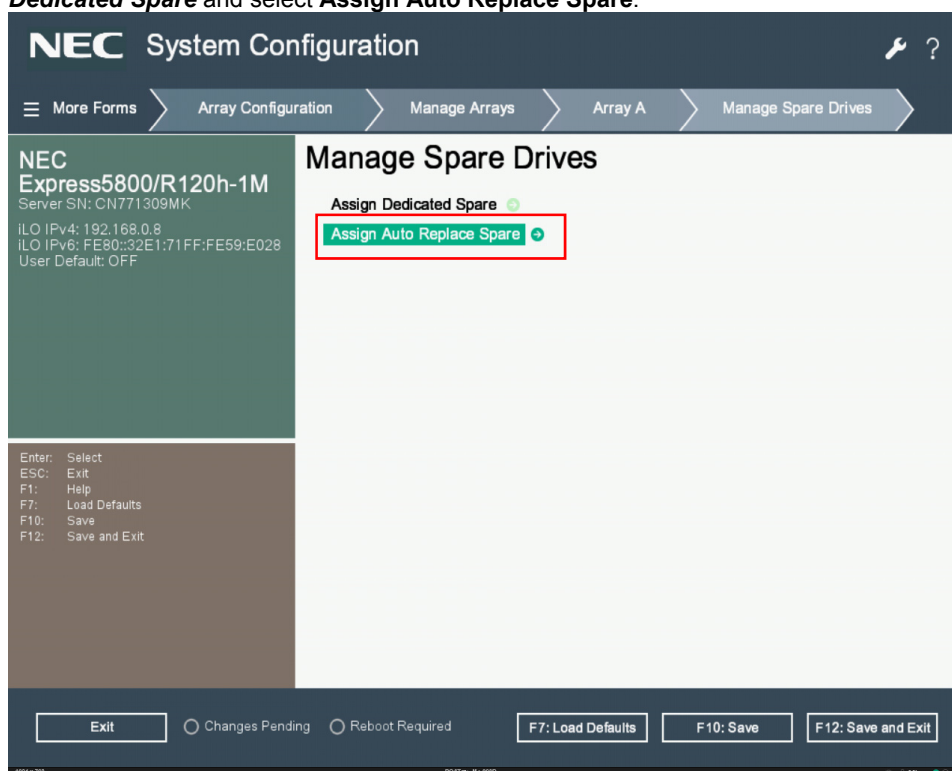
⑦ The spare drive information will list in the logical drive members.



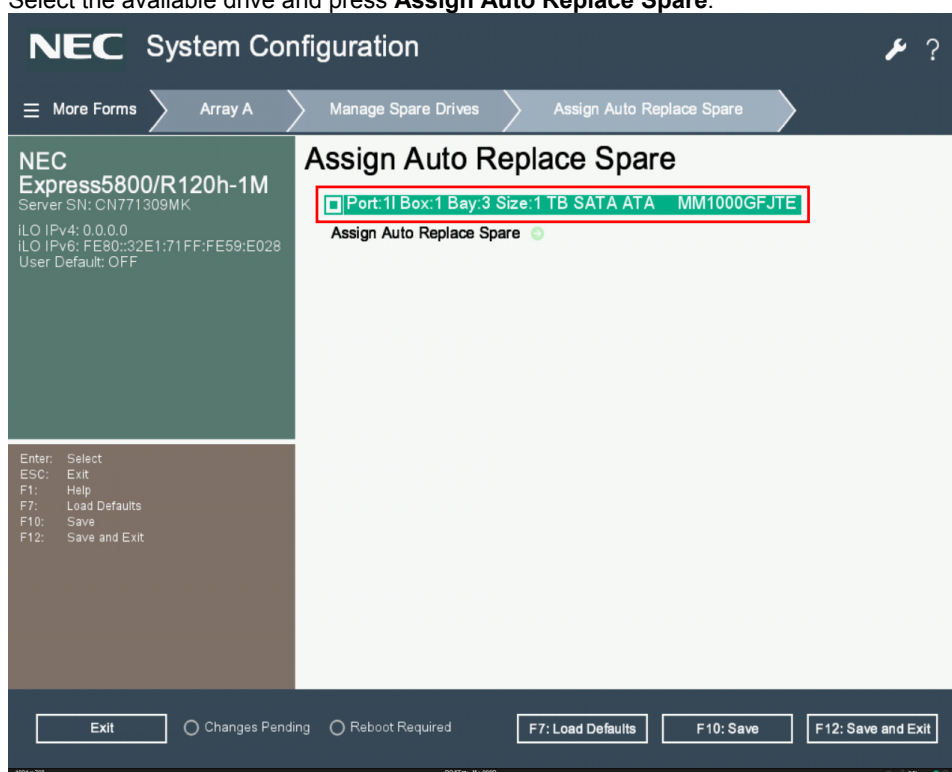
10. Exit HPE Smart Array S100i Utility.

(2) Assign Auto Replace Spare

1. Refer to steps from 1 to 5 procedure in the section in 2.4.3 *Configure HotSpare (1) Assigned Dedicated Spare* and select **Assign Auto Replace Spare**.



2. Select the available drive and press **Assign Auto Replace Spare**.



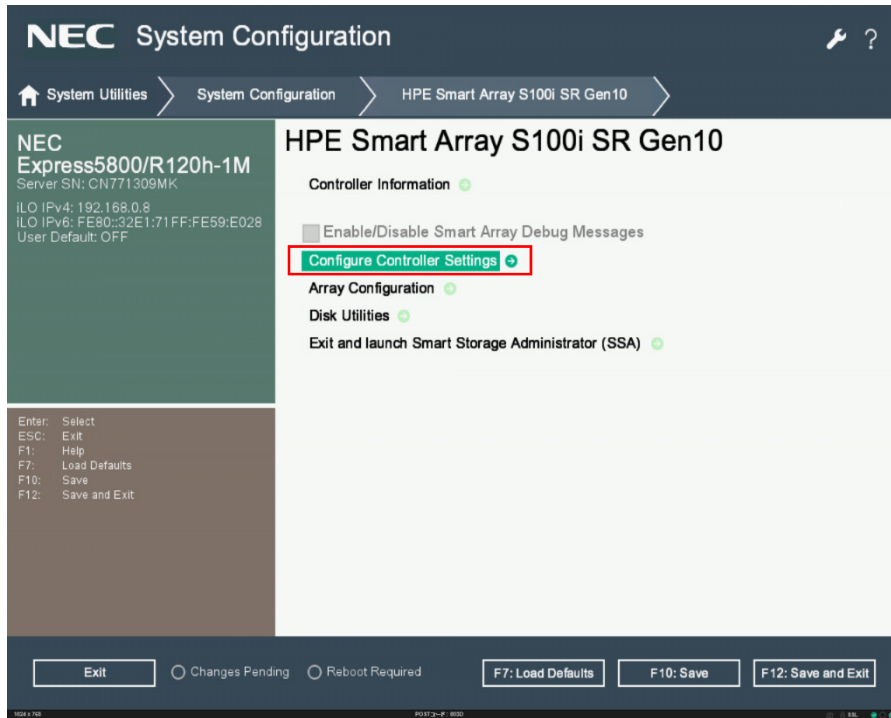
3. Then check the spare drive is one of the logical drive members, refer to Step 9 ①~⑦ procedure in the section 2.4.3 *Configure HotSpare (1) Assigned Dedicated Spare* section.
4. Exit HPE Smart Array S100i Utility.

2.4.4 Others

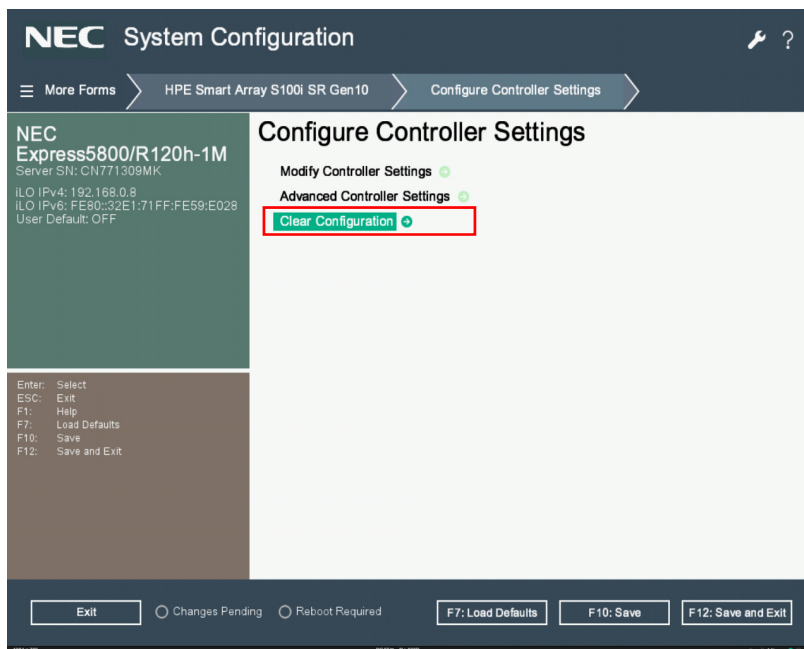
(1) Clear Configuration

Clear the configuration information. Note this operation will make all data on the logic drive be erased and no longer accessible. **Make sure all the data backups are done before do it.** Start HPE Smart Array S100i Utility to clear the configuration information.

1. From the TOP menu of HPE Smart Array S100i Utility. Select **Configure Controller Settings**.

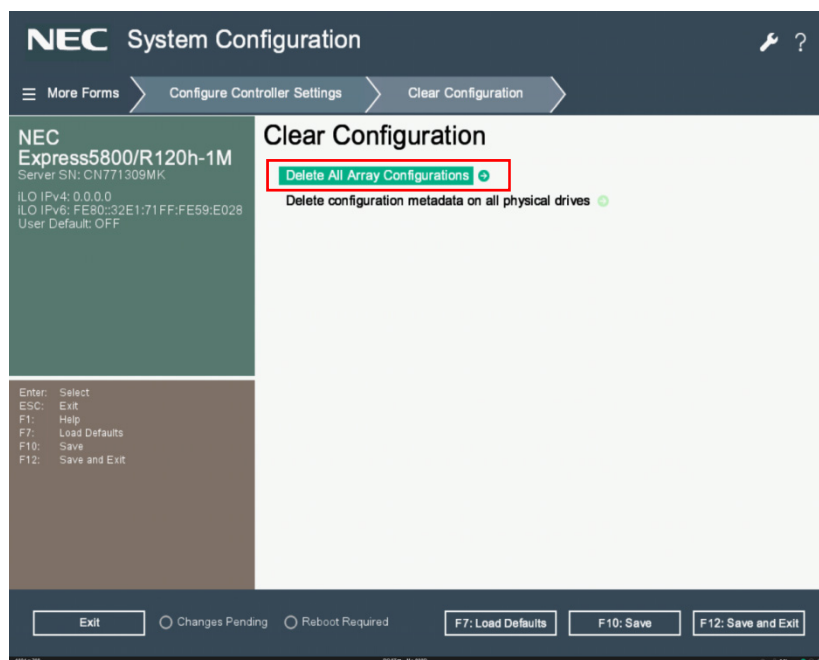


2. Select **Clear Configuration**.



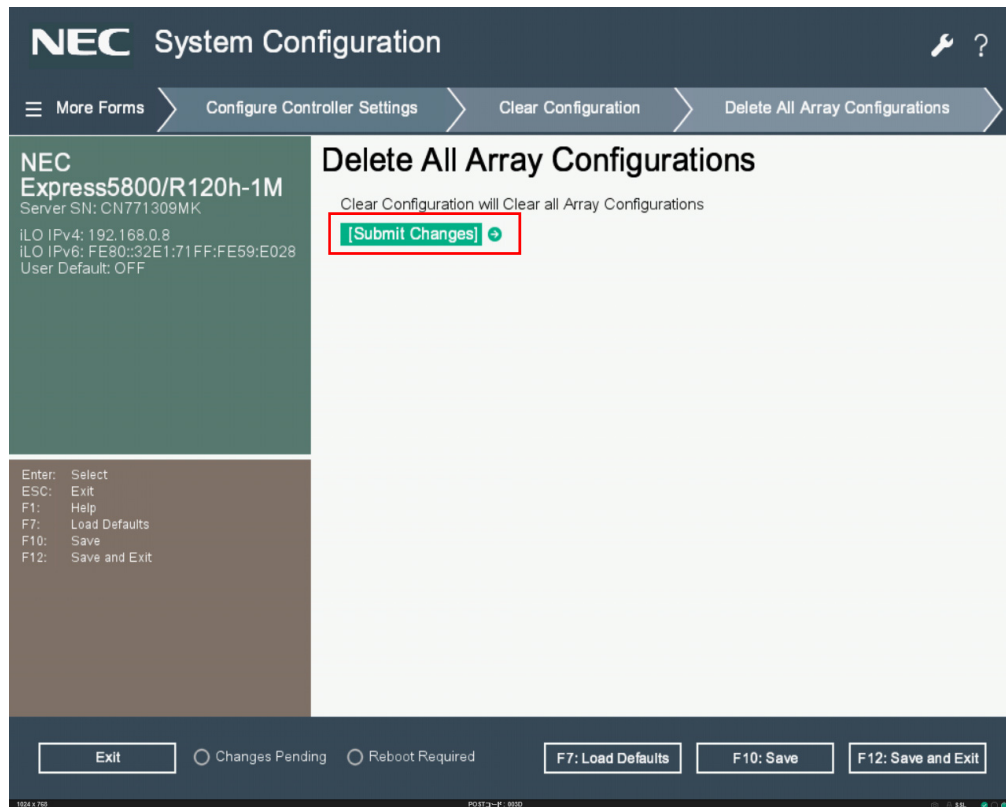
3. Select **Delete All Array Configurations**.

Important The operation clears whole array information from controller and all data in the array will be lost.

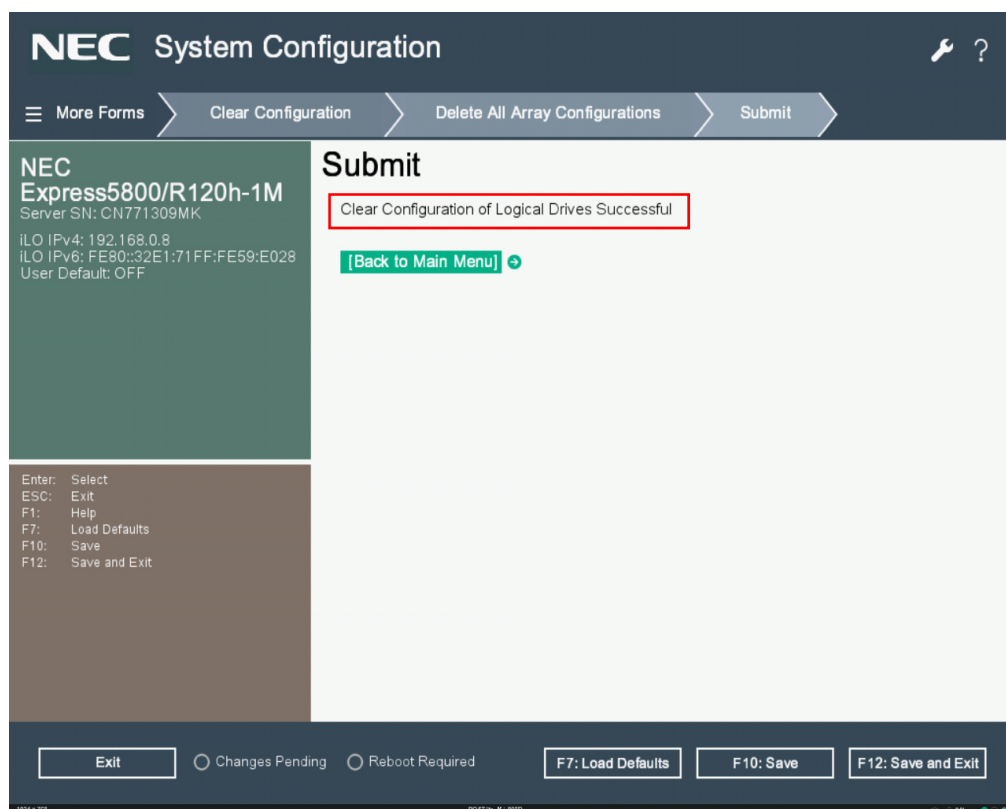


Note To delete the array data in physical drives, please select Delete configuration metadata on all physical drives.

4. All array data will be cleared and lost once click the **Submit Changes**.

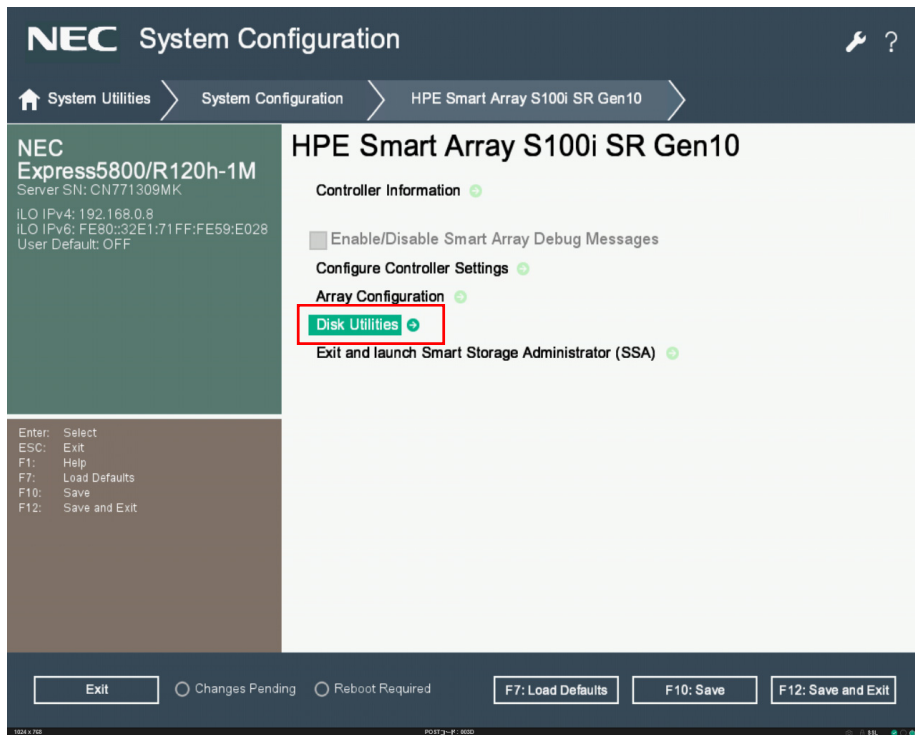


5. Successful message appeared after clear configuration then click **Back to Main Menu**.

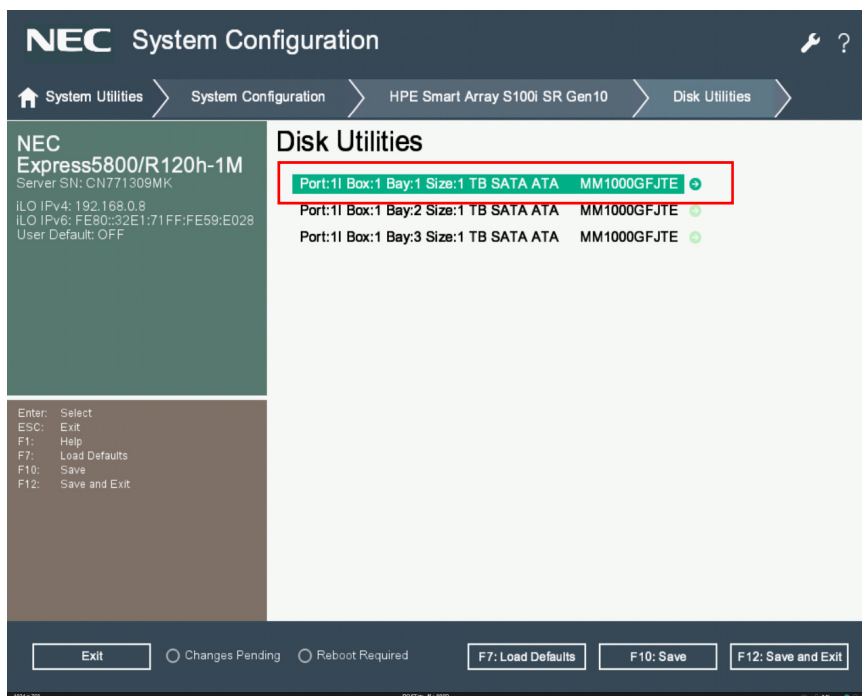


(2) Physical device information

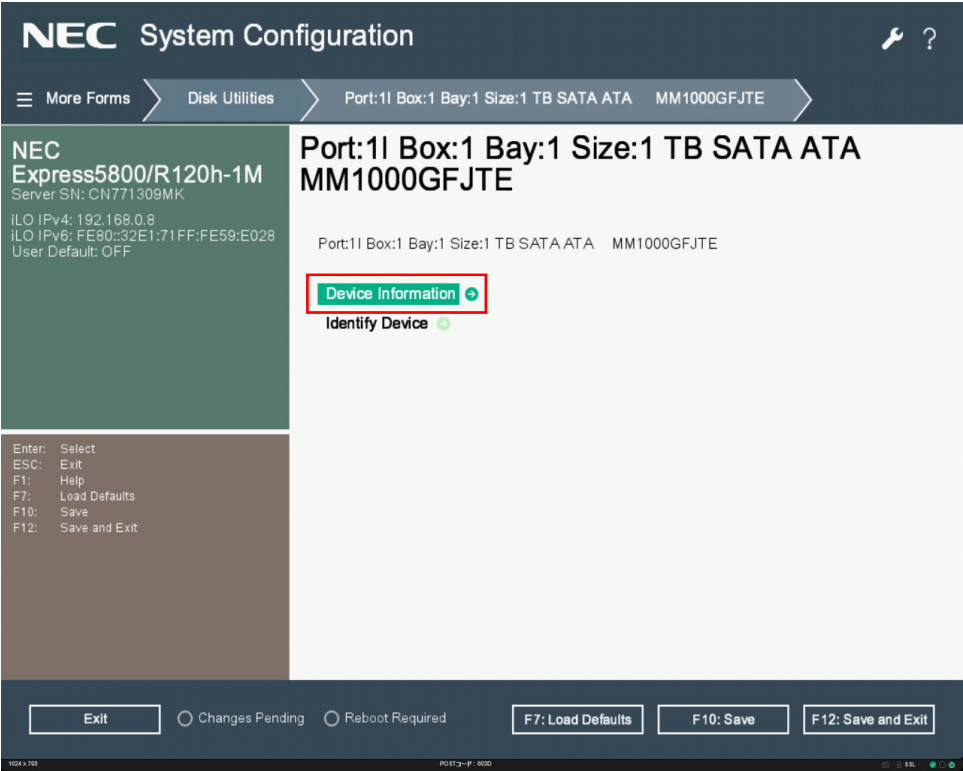
1. Use this feature to display physical device information.
From the TOP menu of HPE Smart Array S100i Utility, select **Disk Utilities**.



2. Select a drive to see more details.



3. Select **Device Information**.



4. Then the drive information shows as below figure.



3. Details of EXPRESSBUILDER

For details on EXPRESSBUILDER, refer to *Chapter 1(2. Details of EXPRESSBUILDER) of "Maintenance Guide (Common)"*.

4. Details of Starter Pack

For details on Starter Pack, refer to *Chapter 1(3. Details of Starter Pack) of "Maintenance Guide (Common)"*.

5. iLO 5

Using iLO 5, which is an LSI for system management, enables various functions.

For more information about the functions of iLO 5, see *iLO 5 User's Guide*.

Important Back up the iLO 5 setting information beforehand to provide against an unexpected failure or an update of the iLO firmware.
For the detailed procedure, refer to "*iLO 5 User's Guide*".

5.1 Various functions of the iLO5

iLO 5 has the control functions listed below.

Main functions of iLO	Description
Server status monitoring	iLO monitors the temperature inside the server and controls the cooling fan to cool the server appropriately. It also monitors the statuses of the network and many of the components such as the cooling fan, memory, processor, power supply unit, storage, and other devices that are installed in the server. In addition to these, the versions of the installed firmware and software are also monitored.
Agentless management	Agentless Management settings enable services to operate in the iLO firmware instead of the host OS. It also enables management without using any resources from the memory and processor on the host OS. In addition to monitoring the important internal subsystems, iLO can send an SNMP report directly to the management software, such as NEC ESMPRO Manager even when the host OS is not installed.
Integrated management log (IML)	IML can display events occurred on the server and set the notifications, such as SNMP report, Email alert, and Remote syslog .
Active health system log (AHS Log)	Downloads the Active Health System log. If necessary, the AHS log file may need to be sent to NEC, or the maintenance staff may collect it from you.
iLO linkage management	The iLO linkage function enables detection and management of multiple servers simultaneously without using management software.
Integrated remote control (IRC)	You can access the server safely at high speed from a remote console located anywhere in the world as long as the network is connected to the server.
Virtual media	You can remotely mount a high-performance virtual media device on the server.
Virtual power control	This function controls the power supply state of the management target server safely.
Deployment and provisioning	By using a GUI or CLI of the multiple tasks including automation of deployment or provisioning, you can use the power supply control and the virtual media.
Power consumption and settings	This function monitors the power consumption, sets the upper limit of the power consumption of the supported server.
User account	You can log in to iLO via a local or directory service user account.
Kerberos supported	You can set the Kerberos authentication here. The Zero sign-in button will be added to the login screen.

If you purchase the separately sold license, the following functions become available.

Item	On-board function	Extended license of remote management (Advanced) N8115-33	Extended license of remote management (Scale-out) N8115-34
Directory service authentication (Active Directory, LDAP)	×	○	×
Two-Factor authentication (Kerberos supported)	×	○	×
Use of virtual media through the integrated remote console	×	○	×
Scripted virtual media	×	○	×
Integrated remote console (IRC)	Pre-OS only	○	Pre-OS only
Global team collaboration through an IRC with up to six server administrators	×	○	×
Recording and playing back a video through an IRC	×	○	×
Recording and playing back a virtual serial port	×	○	○
Text-base remote console through SSH	×	○	○
E-mail alert	×	○	○
Remote Syslog	×	○	○
Advanced power management (graphic chart of electric power and upper limit setting of dynamic power consumption) *	×	○	○
iLO linkage management	×	○	○
iLO linkage detection	○	○	○
Remote serial console (virtual serial port)	○	○	○
Server Health Summary	○	○	○
iLO restart	○	○	○
Redfish® API	○	○	○
Agentless Management	○	○	○
Server status monitoring	○	○	○
Web-base GUI	○	○	○
Virtual power control	○	○	○
SSH/SMASH CLI (including serial console redirection)	○	○	○
IPMI/DCMI (including serial console redirection)	○	○	○

* Some units may not be supported.

5.2 NMI Function

By setting the OS in advance, this server allows you to perform a memory dump via NMI by using the virtual NMI function of iLO.

Memory dumps can be used to check for errors in the OS, drivers, and applications and are helpful in finding the cause of a system stall.

When a system stall occurs, you can perform a memory dump via NMI and save the memory dump even if the only option is a forced shutdown of the system.

Execution example using the iLO Virtual NMI function:

1. Select [Information] from the left side menu of iLO5.
2. Select [Diagnostics] from the menu in the upper right.
3. Scroll down to the bottom of the information screen in the lower right, and open [Show System Diagnostics].
4. Press the [Generate NMI] button.
5. When the confirmation screen appears, click the [Yes, Proceed] button.

For details about how to configure memory dump settings on the OS, refer to the installation guide of the OS.

6. NEC ESMPRO

6.1 NEC ESMPRO ServerAgentService (for Windows)

For details of NEC ESMPRO ServerAgentService (for Windows), see “*NEC ESMPRO ServerAgentService Installation Guide (Windows)*” in Starter Pack.

6.2 NEC ESMPRO Manager

NEC ESMPRO Manager can remotely control and monitor the hardware and the RAID system of the server.
To use these features, install the software for the server such as NEC ESMPRO ServerAgentService.

For details, see "*NEC ESMPRO Manager Installation Guide*" or online help.

7. NEC Product Info Collection Utility

NEC Product Info Collection Utility can collect various data and logs related to the server all at once.

You can collect the server information (Product Info) for maintenance by using this utility.

7.1 Usage (for Windows)

Run the `\stdclct\collect.exe` contained in the installation folder of this utility.

This utility is usually installed to the `C:\ezclct` folder.

The `log` folder is created in the `stdclct` folder and “Product Info” is stored in a compressed (zip) file.

Tips

- Log on to Windows with an account that has an administrator privilege.
- The installation drive requires a free space of at least 2.5 GB.
- Restart the server after installing this utility on Windows Server 2016 or Windows Server 2019, but you do not need to restart after updating.
- To collect full device information with this tool, RESTful interface tool needs to be installed. If it is not installed, logs required for maintenance may not be collected.

8. Smart Storage Administrator

Smart Storage Administrator is an application to manage or monitor the following RAID controllers.

- Onboard RAID Controller
- N8103-189 RAID Controller (0GB, RAID 0/1)
- N8103-190 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-191 RAID Controller (4GB, RAID 0/1/5/6)
- N8103-192 RAID Controller (0GB, RAID 0/1)
- N8103-193 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-194 RAID Controller (4GB, RAID 0/1/5/6)
- N8103-195 RAID Controller (0GB, RAID 0/1)
- N8103-201 RAID Controller (2GB, RAID 0/1/5/6)
- N8103-196 RAID Controller (4GB, RAID 0/1/5/6)

See "*Installation Guide (Windows)*" for the installation of Smart Storage Administrator.

For more details on Smart Storage Administrator's operation method and function, see "*Smart Storage Administrator User's Guide*" on the following website.

NEC corporate site: <https://www.58support.nec.co.jp/global/download/>

-[Rack]-[Express5800/R120h-1M] or [Express5800/R120h-2M]

9. Express Report Service / Express Report Service (HTTPS)

For details about Express Report Service / Express Report Service (HTTPS), see “*Express Report Service / Express Report Service (HTTPS) Installation Guide (Windows)*” in Starter Pack.

***10.* Express Report Service (MG)**

Express Report Service (MG) installer and manual can be downloaded from the website below.

<https://www.58support.nec.co.jp/global/download/index.html>

For details about Express Report Service (MG), see “Express Report Service (MG) Installation Guide (Windows)”.

NEC Express5800 Series

Express5800/R120h-1M, R120h-2M

3

Appendix

1. IML Error Message

A list on all error messages and error codes recorded in the Integrated Management Log (IML).

2. List of Windows Event Logs

Shows a list of Windows event logs

3. Accessing Data for Electric Power, Temperature, and Processor Utilization

Describes how to check power consumption in watts, intake temperature, and logical processor utilizations.

4. Glossary

5. Revision Record

***1.* IML Error Message**

For all error messages recorded in the Integrated Management Log (IML) and their remedies, refer to *Chapter 2 (1. IML Error Messages) of Maintenance Guide (Common)*.

2. List of Windows Event Logs

OS

Event Log

ID	Source	Type	Message (Description)
	Timing when an event is logged		Action

All Windows OS

System Event Log

1	VDS Basic Provider	Error	An unexpected error occurred. Error code: 32@01000004
	When using a USB device		This event does not affect system operation.
51	Cdrom	Warning	Error detected on the device \Device\CdRom0 during the paging operation.
	When installing an OS		This event may be registered in the event viewer, but this does not affect system operation.
56	Application Popup	Error	<p>The SCSI device driver returned an invalid ID for a child device (XXXXXX).</p> <p>* This event can be displayed as follows, but this does not affect the system operation. The ID can be different depending on your environment.</p> <p>" The description of event ID 56 from the source "Application Popup" cannot be found. The component which causes this event is not installed on the local computer or the installation is damaged. Install the component on the local computer or repair it.</p> <p>If the event occurs on another computer, you must save the displayed information with it.</p> <p>The event contains the following information: SCSI XXXXXX</p> <p>The message resource is present, but the messages can not be found in string table or message table.</p>
	When starting system		This event can be registered in the system, which multiple RAID controllers and SAS controllers are connected to, but this does not affect the system operation.
129	SmartDQa	Warning	Reset was issued to the device \Device\RaidPort(x). (x is any number)
	While the system is running		If this message has been registered as a log during heavy I/O, there is no problem since the OS has succeeded in retry. Continue using.
129	SmartPqi	Warning	Reset was issued to the device \Device\RaidPort(x). (x is any number)
	When running the system		Even if the message is registered in the log, there is no problem because the OS has successfully completed the retry. you don't need any changes.
157	Disk	Warning	Disk x is suddenly removed.
	When creating a RAID		If you create new RAID on Windows, this event can be registered, but this does not affect the system operation.

1407	ESMCommonService	Error	The following event occurred before the current reboot due to a system shutdown/stop. Date : YYYY-MM-DD hh:mm:ss Event Class : 0x11 Event Code : 0x0A Status : Critical Description : xxxxx Connectivity status changed to xxxxx for adapter in slot x, port x
	When starting an OS, or applying Standard Program Package.		This event does not affect system operation.
1407	ESMCommonService	Error	The following event occurred before the current reboot due to a system shutdown/stop. Date : YYYY-MM-DD hh:mm:ss Event Class : 0x11 Event Code : 0x0C Status : Critical Description : Redundancy status changed to xxxxx by adapter in slot x, port x
	When starting an OS, or applying Standard Program Package.		This event does not affect system operation.
1407	ESMCommonService	Error	The following event occurred before the current reboot due to a system shutdown/stop. Date : YYYY-MM-DD hh:mm:ss Event Class : 0x11 Event Code : 0x0D Status : Critical Description : All links are down in adapter xxxxx in slot x
	When starting an OS, or applying Standard Program Package.		If the message is as shown above, there is no problem with system operation.
4367	Agentless Management Service	Error	Description of Event ID 4367, IML Class Code 17, Event Code 13: All links are down in adapter xxxxx in slot xCheck the connection to the adapter and validate the connectivity from the server to any external device, including the cabling. If no problems are found, the adapter or other connectivity device may need replacement.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4367	Agentless Management Service	Error	Description of IML Event ID 4367, Class Code 17, Event Code 12: Redundancy status changed to decreased by adapter in slot x, port xIf redundancy decreased, check the connection to the adapter and validate the connectivity from the server to any external device, including the cabling. If no problems are found, the adapter or other connectivity device may need replacement
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4367	Agentless Management Service	Error	Description of IML Event ID 4367, Class Code 17, Event Code 10: xxxxx Connectivity status changed to Link Failure for adapter in slot x, port xIf the connection is lost, then check the physical connection from the server to its destination device such as interconnect ,blade, switch etc, including any cables. Refer to the NIC issues flowchart in the Troubleshooting Guide for more information.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.

37130	ESMCommonService	Error	Date : YYYY-MM-DD hh:mm:ss Event Class : 0x11 Event Code : 0x0A Status : Critical Description : xxxxx Connectivity status changed to xxxxx for adapter in slot x, port x
	When starting an OS, or applying Standard Program Package.		This event does not affect system operation.
37132	ESMCommonService	Error	Date : YYYY-MM-DD hh:mm:ss Event Class : 0x11 Event Code : 0x0C Status : Critical Description : Redundancy status changed to xxxxx by adapter in slot x, port x
	When starting an OS, or applying Standard Program Package.		This event does not affect system operation.
37133	ESMCommonService	Error	Message (Description) : Date : YYYY-MM-DD hh:mm:ss Event Class : 0x11 Event Code : 0x0D Status : Critical Description : All links are down in adapter xxxxx in slot x
	When starting an OS, or applying Standard Program Package.		This event does not affect system operation.

Windows Server 2019

System Log

4	l2nd	Warning	HPE Ethernet 10Gb 2-port 530SFP+ Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd	Warning	HPE Ethernet 10Gb 2-port 530T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd	Warning	QLogic BCM57810 10 Gigabit Ethernet (NDIS VBD Client) #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
4	l2nd2	Warning	HPE Ethernet 10Gb 2-port 521T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd2	Warning	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	q57nd60a	Warning	HPE Ethernet 1Gb 4-port 331T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	q57nd60a	Warning	HPE Ethernet 1Gb 2-port 332T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
11	Elxhc	Error	The driver detected a controller error in "\Device\RaidPort(x)". (x is any number)
	When installing applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 2-port 361T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 4-port 366T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 4-port 366FLR Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1iexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.

27	ixgbs	Warning	HPE Ethernet 10Gb 2-port 562FLR-T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	ixgbs	Warning	HPE Ethernet 10Gb 2-port 562T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	ixgbi	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When installing OS		This event does not affect system operation.
27	ixgbi	Warning	HPE Ethernet 10Gb 2-port 562T Adapter #xx Network link is disconnected.
	When installing OS		This event does not affect system operation.
27	i40ea	Warning	HPE Ethernet 10Gb 2-port 562SFP+ Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	i40ea	Warning	HPE Ethernet 10Gb 562SFP+ Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	i40ei65	Warning	The description for Event ID 27 from source "i40ei65" cannot be found. Either the component that raises this event is not installed on your local computer or the installation is corrupted. You can install or repair the component on the local computer.
	When installing an OS		This event does not affect system operation.
56	qebdrv	Warning	NTPNP_PCIxxxx: RDMA has been implicitly disabled due to RDMA interface incompatibility between NDIS Miniport (ver x.xx.xx.x) and VBD (ver x.xx.x.x) drivers. VBD driver upgrade is required. * The value of x varies depending on your environment.
	When applying Standard Program Package		This event does not affect system operation.
57	qebdrv	Warning	NTPNP_PCIxxxx: RDMA has been implicitly disabled due to RDMA interface incompatibility between NDIS Miniport (ver x.xx.xx.x) and VBD (ver x.xx.x.x) drivers. NDIS Miniport upgrade is required. * The value of x varies depending on your environment.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
69	i40ei65	Warning	The description for Event ID 69 from source "i40ei65" cannot be found. Either the component that raises this event is not installed on your local computer or the installation is corrupted. You can install or repair the component on the local computer.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
129	SmartDQa	Warning	A reset was issued to the device "\Device\RaidPort(x)". (x is any number)
	When running the system		This event may be registered during high load. Even if the message is registered as a log, there is no problem because a retry has succeeded on the OS. Continue to use it as is.
129	SmartPqi	Warning	A reset was issued to the device "\Device\RaidPort(x)". (x is any number)
	When running the system		Even if the message is registered as a log, there is no problem because a retry has succeeded on the OS. Continue to use it as is.

134	Microsoft-Windows-Time-Service	Warning	NtpClient was unable to set a manual peer to use as a time source because of a DNS resolution error on 'time.windows.com,0x8'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter. Error: Unknown host. (0x80072AF9)
	When running the system		This event does not affect system operation if it is not recorded after connecting to the internet.
157	Disk	Warning	Disk x was suddenly removed.
	When creating a RAID		This event may be registered when you create a new RAID on Windows. There is no problem affecting system operations.
225	Kernel-PnP	Warning	The application YYY with process id XXX stopped the removal or ejection for the device ZZZ. * ZZZ : Instance name of the device YYY : Name of the process that was using the device XXX : ID of the process that was using the device
	When applying Standard Program Package		This event does not affect system operation.
7023	Service Control Manager	Error	"xxxxxxx service terminated with the following error: A device attached to the system is not functioning."
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
7023	Service Control Manager	Error	Spooler service was terminated with the following error: Insufficient memory.
	When installing an OS		There is no problem if it occurs under the following conditions. 1. It occurs only once during OS installation and is not recorded repetitively. 2. The service operates normally after an OS signon.
7030	Service Control Manager	Error	The Printer Extensions and Notifications service is marked as an interactive service. However, the system is configured to not allow interactive services. This service may not function properly.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
10010	Microsoft-Windows-DistributedCOM	Error	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX} did not register with DCOM within the required timeout.
	When running the system		This event does not affect system operation.
10149	Microsoft-Windows-WinRM	Warning	The WinRM service is not listening to WS-Management requests.
	When rebooting an OS.		If WinRM event 10148 (the WinRM service is listening to WS-Management requests) is outputted immediately after that, it may be ignored.

Application Event Log

1015	Microsoft-Windows-Security-SPP	Error	Detailed HRESULT. Returned hr=0xC004F022, Original hr=0x*****
	When rebooting an OS.		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
3007	EvtAgnt	Warning	An error occurred when opening the event log file "Parameters". Logs will not be processed. The return code from OpenEventLog is 87.
	When enabling SNMP		It is registered at each restart, but may be ignored.
3007	EvtAgnt	Warning	An error occurred when opening the event log file "State". Logs will not be processed. The return code from OpenEventLog is 87.
	When enabling SNMP		It is registered at each restart, but may be ignored.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: hr=0x***** Command-line arguments: RuleId=*****
	When rebooting an OS.		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.

Applications and Services Logs

1	Microsoft-Windows-SMBWitnessClient	Error	The initialization of the witness client failed with an error (Cannot find the specified file).
	When installing an OS		This event does not affect system operation if it is recorded only on the installation and not recorded repeatedly.
69	Microsoft-Windows-AppModel-Runtime	Error	Failed with 0x490 modifying AppModel Runtime status for package ***** for user ***** (current status = 0x0, desired status = 0x20).
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update service could not be established.
	When running the system		This event does not affect system operation if it is not recorded after connecting to the internet.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When running the system		This event does not affect system operation if it is not recorded after connecting to the internet.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When running the system		This event does not affect system operation if it is not recorded after connecting to the internet.
215	AppReadiness	Error	'ART:UserFirstLogon' of <User> failed. Error: 'Illegal operation attempted on a Registry key which has been marked for deletion' (0 second)
	When installing an OS		This event does not affect system operation if it is not recorded repeatedly after installing an OS.
360	Microsoft-Windows-User Device Registration	Warning	Windows Hello for Business provisioning will not be launched. Device is AAD joined (AADJ or DJ++): Not Tested User has logged on with AAD credentials: No Windows Hello for Business policy is enabled: Not Tested Windows Hello for Business post-logon provisioning is enabled: Not Tested Local computer meets Windows hello for business hardware requirements: Not Tested User is not connected to the machine via Remote Desktop: Yes User certificate for on premise auth policy is enabled: Not Tested Machine is governed by none policy.
	When rebooting an OS.		There is no problem if it occurs in an environment not registered in Microsoft Azure AD.

Windows Server 2016

System Log

4	l2nd	Warning	HPE Ethernet 10Gb 2-port 530SFP+ Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd	Warning	HPE Ethernet 10Gb 2-port 530T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd	Warning	QLogic BCM57810 10 Gigabit Ethernet (NDIS VBD Client) #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
4	l2nd2	Warning	HPE Ethernet 10Gb 2-port 521T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd2	Warning	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	q57nd60a	Warning	HPE Ethernet 1Gb 4-port 331T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	q57nd60a	Warning	HPE Ethernet 1Gb 2-port 332T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 2-port 361T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 4-port 366T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 4-port 366FLR Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1iexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
27	ixgbs	Warning	HPE Ethernet 10Gb 2-port 562FLR-T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.

27	ixgbs	Warning	HPE Ethernet 10Gb 2-port 562T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	ixgbi	Warning	Intel(R) Ethernet Controller X550 #xx Network link is disconnected.
	When installing OS		This event does not affect system operation.
27	ixgbi	Warning	HPE Ethernet 10Gb 2-port 562T Adapter #xx Network link is disconnected.
	When installing OS		This event does not affect system operation.
27	i40ea	Warning	HPE Ethernet 10Gb 2-port 562SFP+ Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	i40ea	Warning	HPE Ethernet 10Gb 562SFP+ Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	i40ei	Warning	The description for Event ID 27 from source "i40ei" cannot be found. Either the component that raises this event is not installed on your local computer or the installation is corrupted. You can install or repair the component on the local computer.
	When installing an OS		This event does not affect system operation.
56	qebdrv	Warning	NTPNP_PC\xxxx: RDMA has been implicitly disabled due to RDMA interface incompatibility between NDIS Miniport (ver x.xx.xx.x) and VBD (ver x.xx.x.x) drivers. VBD driver upgrade is required. * The value of x varies depending on your environment.
	When applying Standard Program Package		This event does not affect system operation.
219	Microsoft-Windows-Kernel-PnP	Warning	The driver \Driver\WudfRd failed to load for the device xxxxxxxxxxxxxxxxx.
	When starting system or connecting a disk		This may be recorded when starting the system or connecting a disk depending on timing, but does not affect system operation.
225	Kernel-PnP	Warning	The application YYY with process id XXX stopped the removal or ejection for the device ZZZ. * ZZZ : Instance name of the device YYY : Name of the process that was using the device XXX : ID of the process that was using the device
	When applying Standard Program Package		This event does not affect system operation if it is logged when applying Standard Program Package.
4113	Display	Warning	Display driver MxG2eDo64 stopped responding and has been successfully disabled. Date : 2017/06/08 20:32
	When running the system		In this case, the resolution can't be changed, but the other function is no problem. It's normalized by restarting. But when the same case is repeated, please disable Matrox GA driver.
7023	Service Control Manager	Error	"xxxxxxx service terminated with the following error: A device attached to the system is not functioning."
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.

7023	Service Control Manager	Error	<p>The Data Sharing Service service terminated with the following error: %%3239247874</p> <p>* The description for Event ID 7023 from source Service Control Manager cannot be found. Either the component that raises this event is not installed on your local computer or the installation is corrupted. You can install or repair the component on the local computer.</p> <p>If the event originated on another computer, the display information had to be saved with the event.</p> <p>The following information was included with the event:</p> <p>Data Sharing Service %%3239247874</p> <p>The locale specific resource for the desired message is not present.</p>
	When running an OS for the first time or rebooting it, or while the system is in use		This event does not affect system operation.
7030	Service Control Manager	Error	The Printer Extensions and Notifications service is marked as an interactive service. However, the system is configured to not allow interactive services. This service may not function properly.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
10010	Microsoft-Windows-DistributedCOM	Error	The server {XXXXXXXX-XXXX-XXXX-XXXX-XXXXXXXXXXXX} did not register with DCOM within the required timeout.
	When running an OS for the first time or rebooting it		<p>Refer to the following website.</p> <p>http://support.microsoft.com/kb/956479/</p>
10317	Microsoft-Windows-NDIS	Error	Miniport Microsoft Network Adapter Multiplexor Driver, {xxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx}, had event Network Interface deleted while PNP Device still exists. Note that this event is provided for informational purpose and might not be an error always (Eg: In case of vSwitch which was recently un-installed or a LBFO team was removed)
	When removing a team		This event does not affect system operation.

Application Event Log

1014	Microsoft-Windows-Security-SPP	Warning	Acquisition of End User License failed. hr=0x80072EE7
	When running an OS for the first time		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
1015	Microsoft-Windows-Security-SPP	Warning	Detailed HRESULT. Returned hr=0xC004F022, Original hr=0x80049E00
	When running an OS for the first time		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed, error code is Not implemented.
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: hr=0x***** Command-line arguments: RuleId=*****
	When running an OS for the first time or rebooting it		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.
8200	Microsoft-Windows-Security-SPP	Error	License acquisition failure details. hr=0x80072EE7
	When running an OS for the first time or rebooting it		This event does not affect system operation if it is not recorded repeatedly after activating the Windows.

Applications and Services Logs

69	Microsoft-Windows-AppModel-Runtime	Error	Failed with 0x490 modifying AppModel Runtime status for package ***** for user ***** (current status = 0x0, desired status = 0x20).
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.
134	Microsoft-Windows-Time-Service	Warning	NtpClient was unable to set a manual peer to use as a time source because of DNS resolution error on 'time.windows.com,0x8'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter.
	When running an OS for the first time or rebooting it		This event does not affect system operation if it is not recorded after connecting to the internet.
200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update service could not be established.
	When running an OS for the first time or rebooting it		This event does not affect system operation if it is not recorded after connecting to the internet.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When running an OS for the first time or rebooting it		This event does not affect system operation if it is not recorded after connecting to the internet.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When running an OS for the first time or rebooting it		This event does not affect system operation if it is not recorded after connecting to the internet.
506	Microsoft-Windows-DeviceManagement-Pushrouter	Error	DmWapPushService: Failed to register WNF with EventAggregator for WAP messages received by SMS Router. Result: (0xC002000B).
	When running an OS for the first time		This event does not affect system operation if it is recorded only on the first startup and not recorded repeatedly.

Windows Server 2012 R2

System Log

4	l2nd	Warning	HPE Ethernet 10Gb 2-port 530SFP+ Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd	Warning	HPE Ethernet 10Gb 2-port 530T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd	Warning	Broadcom BCM57810 #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
4	l2nd2	Warning	HPE Ethernet 10Gb 2-port 521T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	l2nd2	Warning	HPE Ethernet 10/25Gb 2-port 621SFP28 Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	q57nd60a	Warning	HPE Ethernet 1Gb 4-port 331T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	q57nd60a	Warning	HPE Ethernet 1Gb 2-port 332T Adapter #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
4	b57nd60a	Warning	Broadcom NetXtreme Gigabit Ethernet #xx: The network link is down. Check to make sure the network cable is properly connected.
	When installing an OS		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 2-port 361T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 4-port 366T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1repress	Warning	HPE Ethernet 1Gb 4-port 366FLR Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	e1iexpress	Warning	Intel(R) I350 Gigabit Network Connection #xx Network link is disconnected.
	When installing an OS		This event does not affect system operation.
27	ixgbs	Warning	HPE Ethernet 10Gb 2-port 562FLR-T Adapter #xx The network link has been cut off.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	ixgbs	Warning	HPE Ethernet 10Gb 2-port 562T Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.

27	i40ea	Warning	HPE Ethernet 10Gb 2-port 562SFP+ Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
27	i40ea	Warning	HPE Ethernet 10Gb 562SFP+ Adapter #xx Network link is disconnected.
	When installing an OS, starting system, or applying Standard Program Package		This event does not affect system operation.
46	volmgr	Error	Crash dump initialization failed!
	When installing an OS		Go to the following Microsoft website for details. http://support.microsoft.com/kb/2756313
56	qebdrv	Warning	NTPNP_PC!xxxx: RDMA has been implicitly disabled due to RDMA interface incompatibility between NDIS Miniport (ver x.xx.xx.x) and VBD (ver x.xx.x.x) drivers. VBD driver upgrade is required. * The value of x varies depending on your environment.
	When applying Standard Program Package		This event does not affect system operation.
134	Microsoft-Windows-Time-Service	Warning	NtpClient was unable to set a manual peer to use as a time source because of a DNS resolution error on 'time.windows.com,0x9'. NtpClient will try again in 15 minutes and double the reattempt interval thereafter.
	When installing an OS, starting system, or applying Starter Pack		If it is not registered after connecting to the Internet, there is no problem with system operation.
1500	SNMP	Error	The SNMP Service encountered an error while accessing the registry key [SYSTEM\CurrentControlSet\Services\SNMP\Parameters\TrapConfiguration].
	When installing an OS		If this event is logged only when SNMP is enabled and does not occur repeatedly, there is no problem with system operation. Go to the following Microsoft website for details. http://support.microsoft.com/kb/2002303/
7023	Service Control Manager	Error	The Network List Service terminated with the following error: The device is not ready.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
7023	Service Control Manager	Error	The IP Helper service terminated with the following error: The service cannot be started, either because it is disabled or because there are no enabled devices associated with it.
	When starting an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
7023	Service Control Manager	Error	The WMI Performance Adapter service terminated with the following error: The error cannot be identified.
	When starting an OS or shutting down an OS		Ignore this error because there is no impact on the system.
7030	Service Control Manager	Error	Printer Extensions and Notifications service is marked as interactive service. However, the system is not allowed to use interactive service. Thus, this service might not work correctly.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
10010	Microsoft-Windows-DistributedCOM	Error	The server {xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx} did not register in DCOM within the necessary timeout period.
	When installing an OS		For details, refer to the following website: http://support.microsoft.com/kb/956479/ja (Japanese only)

10016	Microsoft-Windows-DistributedCOM	Error	In the settings of application-specific access authorization, access authorization of local activation for COM server applications with CLSID {D63B10C5-BB46-4990-A94F-E40B9D520160} and APPID {9CA88EE3-ACB7-47C8-AFC4-AB702511C276} cannot be granted to the user NT AUTHORITY SYSTEM SID (S-1-5-18) whose address is LocalHost (LRPC used) running with an SID unable to use application containers (utilization disabled). This security access authorization can be changed using the component service management tool.
	When running an OS for the first time		If this is logged at the first boot of OS and the same event log is not continuously logged, there is no problem.
10149	Microsoft-Windows-WinRM	Warning	The WinRM service is not listening for WS-Management requests.
	When installing an OS		If this event is logged together with ID 7036 "Service Control Manager (Windows Remote Management (WS-Management) service has stopped.), there is no problem in system operation. Also, if WinRM event 10148 (WinRM service is listening WS-Management requests.) is output immediately after this event, there is no problem in system operation.

Application Event Log

24	Microsoft-Windows-WMI	Error	Event provider MLNXProvider attempted to register query "select * from MLNX_NetAdapterStatusEvent" whose target class "MLNX_NetAdapterStatusEvent" in //./root/standardcimv2/mlnx namespace does not exist. The query will be ignored. * There may be cases that the above message is somewhat different.
	At the time of applying Starter Pack		This event is logged in the system when InfiniBand Adapter is connected. This event does not affect system operation.
1014	Microsoft-Windows-Security-SPP	Error	Failed to obtain end-user license. hr=0x80072EE7
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1015	Microsoft-Windows-Security-SPP	Warning	Detailed information of HRESULT Returned hr=0xC004F022, original hr=0x80049E00
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation.
1058	Microsoft-Windows-Security-SPP	Error	Failed to obtain certificate of purchase from ACPI table. Error code: 0xC004F057
	When installing an OS		This event does not affect system operation.
1534	Microsoft-Windows-User Profiles Service	Warning	Profile notification of event Create for component {2c86c843-77ae-4284-9722-27d65366543c} failed.
	When installing an OS		If this event is logged only when installing an OS and does not occur repeatedly, there is no problem in system operation. Error code is not implemented.
8198	Microsoft-Windows-Security-SPP	Error	License Activation (slui.exe) failed with the following error code: Error code: hr=0xC004F063
	When installing an OS		Unless this event is not logged after license authentication, there is no problem in system operation.
8200	Microsoft-Windows-Security-SPP	Error	Detailed information about failure of license authentication hr=0x80072EE7
	When installing an OS		Unless this event is not logged repeatedly after license authentication, there is no problem in system operation.

Applications and Services Logs

2	Microsoft-Windows-Kernel-EventTracing	Error	The session "" cannot be started due to the following error: 0xC000000D
	When running the system		If it is logged at the time of displaying the management screen of the computer, there is no problem.
104	Microsoft-Windows-DeviceSetupManager	Error	The DSM service cannot be started. Result=0x800706B5
	When installing an OS		If this is logged when the OS is installed and the same event log is not continuously logged, there is no problem.
200	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Update Services could not be established.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
201	Microsoft-Windows-DeviceSetupManager	Warning	A connection to the Windows Metadata and Internet Services (WMIS) could not be established.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
202	Microsoft-Windows-DeviceSetupManager	Warning	The Network List Manager reports no connectivity to the internet.
	When running the system		If this event is not registered after the Internet connection is established, there is no problem in system operation.
215	Microsoft-Windows-AppReadiness	Error	'ART:ResolveStoreCategories' of Administrator failed. Error: 'Class not registered' (0.0469065 sec.)
	When installing an OS		If this event is logged only at the first sign-in after OS installation and does not occur repeatedly, there is no problem in system operation.
1001	Microsoft-Windows-Dhcp-Client	Error	The address of the network card with the network address of <MAC address> could not be assigned to this computer from the network (DHCP server). The following error occurred: 0x79 Address acquisition is tried again from the network address (DHCP) server.
	When installing an OS or Starter Pack		If this does not occur continuously, there is no problem of system operation.

3. Accessing Data for Electric Power, Temperature, and Processor Utilization

This section describes how to access data related to input power consumption in watts, intake temperature, and all logical processor utilizations in the Express Server during usual operation in accordance with ENERGY STAR® Program Requirements.

3.1 Windows

The sample program below is verified to be run normally on Windows Server 2019.

3.1.1 Power consumption

Execute the following commands to access power consumption readings on Baseboard Management Controller (BMC) by using Intelligent Platform Management Interface (IPMI).

Network Function Code: 2Ch (Group Extension)

Command Code: 02h (Get Power Reading)

Request Data : 000001DCh

Below is the sample file created by using Visual Basic Script (named as Power.vbs).

```
' Start Script
Option Explicit

' Prepare for IPMI Driver
Dim osv, oclass
Dim oinstance, oipmi
set osv = getobject("winmgmts:root\wmi")
set oclass = osv.get("microsoft_ipmi")
for each oinstance in osv.instancesof("microsoft_ipmi")
    set oipmi = oinstance
next

'Format the IPMI command request
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
oinparams.networkfunction = &h2c
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h02
oinparams.requestdata = array (&hdc, &h01, &h00, &h00)
oinparams.requestdatasize = 4

'call the driver
Dim outparams
set outparams = oipmi.execmethod_("requestresponse",oinparams)

WScript.Echo " Completion Code = 0x" & hex(outparams.Completioncode)
If outparams.Completioncode <> 0 Then
    WScript.Echo " Not supported"
Else
    'WScript.Echo " Data LS Byte   = 0x" & hex(outparams.ResponseData(2))
    'WScript.Echo " Data MS Byte   = 0x" & hex(outparams.ResponseData(3))
    WScript.Echo " Power Consumption = " & outparams.ResponseData(3)*256 + _
        outparams.ResponseData(2) & " watts"
End If
' End Script
' Start Script
```

- Execution example

```
C:\VBS> cscript //nologo Power.vbs
```

- Execution result

```
Completion Code = 0x0
Power Consumption = 306 watts
```

The power consumption is 306 watts.

Tips

Power consumption readings may not be acquired depending on the power supply configuration of the server.
The completion code in such cases is 0xC1 or 0xCB.

3.1.2 Intake air temperature

Execute the following standard commands that conform to IPMI to search Sensor Data Record (SDR) for the temperature sensor and obtain intake air temperature data.

- Get SDR Repository Info
- Reserve SDR Repository
- Get SDR
- Get Sensor Reading

Below is the sample file created by using Visual Basic Script (named as Sensor.vbs),

```
'Start Script
Option Explicit

' Prepare for MS IPMI Driver
Dim osv, oclass
Dim oinstance, oipmi
set osv = getobject("winmgmts:root\wmi")
set oclass = osv.get("microsoft_ipmi")
for each oinstance in osv.instancesof("microsoft_ipmi")
    set oipmi = oinstance
next

' (Get SDR Repository Info)
Dim oinparams
set oinparams = oclass.methods_("requestresponse").inparameters
' (Get SDR Repository Info)
oinparams.networkfunction = &h20
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h20
oinparams.requestdatasize = 0
' Fire IPMI Command
Dim outparams
Dim i, RecordCount
set outparams = oipmi.execmethod_("requestresponse",oinparams)
RecordCount = outparams.ResponseData(3)*256 + outparams.ResponseData(2)

' (Reserve SDR Repository)
oinparams.networkfunction = &h22
oinparams.lun = 0
oinparams.responderaddress = &h20
oinparams.command = &h22
oinparams.requestdatasize = 0
Dim Reserve_LS, Reserve_MS
set outparams = oipmi.execmethod_("requestresponse",oinparams)
Reserve_LS = outparams.ResponseData(1)
Reserve_MS = outparams.ResponseData(2)

' (Get SDR) for each record
Dim Record_LS, Record_MS, Offset, Length
Dim cnt, sensorNum, sensorType
' First Record
Record_LS = 0
Record_MS = 0
For cnt = 0 to RecordCount-1
    Offset = 0
    Length = 9
    oinparams.networkfunction = &h23
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(Reserve_LS, Reserve_MS, Record_LS, Record_MS, Offset, Length)
    oinparams.requestdatasize = 6
    set outparams = oipmi.execmethod_("requestresponse",oinparams)
```

```

If outparams.Completioncode = 0 Then
    If outparams.ResponseData(6) = 1 Then          ' Full Sensor Record
        call GetSensorType(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorType)
        If sensorType = 1 Then                    ' Temperature
            WScript.Echo "===== "
            call GetIDString(Reserve_LS, Reserve_MS, Record_LS, Record_MS)
            WScript.Echo " Sensor Type = Temperature"
            sensorNum = outparams.ResponseData(10)
            call GetSensor(Reserve_LS, Reserve_MS, Record_LS, Record_MS, sensorNum)
        End If
    End If
    Record_LS = outparams.ResponseData(1)
    Record_MS = outparams.ResponseData(2)
    If Record_LS = &hff And Record_MS = &hff Then
        exit For
    End If
End If
Next

Sub GetSensorType(rv_ls, rv_ms, rc_ls, rc_ms, sensorType)
    Dim outtmp
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 12, 2)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse", oinparams)
    sensorType = outtmp.ResponseData(3)
End Sub

Sub GetSensor(rv_ls, rv_ms, rc_ls, rc_ms, sensorNum)
    Dim outtmp, units1, units2, sorttype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 20, 14)
    oinparams.requestdatasize = 6
    set outtmp = oipmi.execmethod_("requestresponse", oinparams)

    units1 = outtmp.ResponseData(3)
    Select Case outtmp.ResponseData(4)
        case 0: units2 = "unspecified"
        case 1: units2 = "degrees C"
        case 6: units2 = "Watts"
        case else: units2 = "Refer to IPMI Specification: Type=0x" & _
            & hex(outtmp.ResponseData(4))
    End Select

    ' (Get Sensor Reading)
    Dim sensorData, rawData, currentValue
    oinparams.networkfunction = &h4
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h2d
    oinparams.requestdata = array(sensorNum)
    oinparams.requestdatasize = 1
    set sensorData = oipmi.execmethod_("requestresponse", oinparams)
    If sensorData.Completioncode <> 0 Then
        WScript.Echo " Sensor Not Available"
        exit Sub
    End If
    rawData = sensorData.ResponseData(1)
    If units1 and &h40 Then
        If rawData And &h80 Then
            rawData = rawData Xor &hff
        End If
    ElseIf units1 and &h80 Then
        call get2complement(rawData, rawData, 8)
    End If
    If (sensorData.ResponseData(2) And &h80) = 0 Or _
        (sensorData.ResponseData(2) And &h40) = 0 Or _
        (sensorData.ResponseData(2) And &h20) Then
        WScript.Echo " Event Status: Unavailable"
    Else
        WScript.Echo " Event Status: ok"
        Dim M, B, k1, k2
        Dim ret
        M = (outtmp.ResponseData(8) And &hc0) * 4 + outtmp.ResponseData(7)
        B = (outtmp.ResponseData(10) And &hc0) * 4 + outtmp.ResponseData(9)
        call get2complement(M, M, 10)
        call get2complement(B, B, 10)
        call get2complement(outtmp.ResponseData(12) And &h0f, k1, 4)
        call get2complement((outtmp.ResponseData(12) And &hf0)/16, k2, 4)
        currentValue = CDbl (((M * rawData) + (B * (10 ^ k1))) * (10 ^ k2))
        WScript.Echo " Current Value = " & currentValue & " " & units2
    End If
End Sub

```

```

Sub get2complement(raw, rv, bit)
    Select Case bit
        case 4:
            If raw And &h8 Then
                rv = 0 - ((&h10 - raw) and &h0f)
            Else
                rv = raw
            End If
        case 8:
            If raw And &h80 Then
                rv = 0 - ((&h100 - raw) and &h0ff)
            Else
                rv = raw
            End If
        case 10:
            If raw And &h200 Then
                rv = 0 - ((&h400 - raw) and &h3ff)
            Else
                rv = raw
            End If
    End Select
End Sub

Sub GetIDString(rv_ls, rv_ms, rc_ls, rc_ms)
    Dim tmpMessage
    Dim outsdridstringtype
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 47, 1)
    oinparams.requestdatasize = 6
    set outsdridstringtype = oipmi.execmethod_("requestresponse",oinparams)

    Dim outsdridstring
    Dim idlength, j
    idlength = outsdridstringtype.ResponseData(3) and 31
    oinparams.networkfunction = &ha
    oinparams.lun = 0
    oinparams.responderaddress = &h20
    oinparams.command = &h23
    oinparams.requestdata = array(rv_ls, rv_ms, rc_ls, rc_ms, 48, idlength)
    oinparams.requestdatasize = 6
    set outsdridstring = oipmi.execmethod_("requestresponse",oinparams)
    tmpMessage = " ID String = "
    For j = 3 to idlength + 2
        tmpMessage = tmpMessage & Chr(outsdridstring.ResponseData(j))
    Next
    WScript.Echo tmpMessage
End Sub
'End Script

```

- Execution example

```
C:\VBS> cscript //nologo Sensor.vbs
```

- Execution result

```

=====
ID String = Baseboard Temp4
Sensor Type = Temperature
Current Value = 45 degrees C
=====
ID String = FntPnl Amb Temp
Sensor Type = Temperature
Current Value = 27 degrees C
=====
ID String = CPU1_DIMM1 Temp
Sensor Type = Temperature
Current Value = 35 degrees C
=====
ID String = CPU1_DIMM2 Temp
Sensor Type = Temperature
Event Status: Unavailable
=====

```

Intake air temperature data is obtained from the sensor with an ID string that contains any of the following: Amb, Ambient, or Front Panel.

In the case of the sample above, the data is obtained from a sensor that contains FntPnl Amb Temp in its ID, with a resulting intake air temperature of 27°C.

3.1.3 Processor utilization

The utilization rate of all logical processors is given by executing the Win32_PerfFormattedData_PerfOS_Processor class that Windows OS provides. Below is the sample file created by using Visual Basic Script (named as Proc.vbs). This script outputs the processor utilization rate every 30 seconds.

```
' Start Script
strComputer = "."
Set objWMIService = GetObject("winmgmts:" _
    & "{impersonationLevel=impersonate}!\\\\" & strComputer & "\root\cimv2")
set objRefresher = CreateObject("WbemScripting.Swbemrefresher")
Set objProcessor = objRefresher.AddEnum _
    (objWMIService, "Win32_PerfFormattedData_PerfOS_Processor").objectSet
objRefresher.Refresh
Dim first
first = true
Do
    For each intProcessorUse in objProcessor
        If first Then
            If intProcessorUse.Name = "_Total" Then
                first = false
            End If
        else
            Wscript.Echo "Proc" & intProcessorUse.Name & " : " & _
                "PercentProcessorTime=" & _
                intProcessorUse.PercentProcessorTime
        End If
    Next
    Wscript.Sleep 30*1000 'sleep 30 * 1000ms
    objRefresher.Refresh
Loop
' End Script
```

- Execution example

```
C:\VBBS> cscript //nologo Proc.vbs
```

- Execution result

```
Proc0 : PercentProcessorTime=0
Proc1 : PercentProcessorTime=0
Proc2 : PercentProcessorTime=0
Proc3 : PercentProcessorTime=0
Proc4 : PercentProcessorTime=76
Proc5 : PercentProcessorTime=0
Proc6 : PercentProcessorTime=0
Proc7 : PercentProcessorTime=0
Proc_Total : PercentProcessorTime=9
```

Proc 0 to Proc 7 show the utilization rate of each processor while Proc_Total shows the total processor utilization rate.

4. Glossary

Terms	Description
AHS	Active Health System (AHS) monitors the status/configuration of the server, and records it to a log file if any changes occur. AHS log is used for maintenance to investigate the failure.
AMP	Advanced Memory Protection (AMP) is a technology for realizing a fault tolerance of the server by memory redundancy (such as mirroring).
AMS	Agentless Management Service (AMS) is an OS service for sending information (such as OS events) that iLO cannot collect directly. iLO records the information received by AMS, and send it to Agentless Management.
EXPRESSBUILDER	Software for setting up the server. EXPRESSBUILDER can be started by pressing <F10> key during POST.
Express Report Service	Software that can report the server failure to the contact center by E-mail or modem. This software is installed with NEC ESMPRO ServerAgentService to the server.
Express Report Service (HTTPS)	Software that can report the server failure to the contact center by HTTPS. This software is installed with NEC ESMPRO ServerAgentService to the server.
Hexalobular	A type of screw head characterized by a 6-point star-shaped pattern. This is often called as "Torx" (the Torx is a third party's trademark). Head sizes are described from T1 to T100. This is sometimes abbreviated as 6lobe.
iLO	A built-in controller that supports the IPMI version 2.0 protocol. The controller is called as iLO5 because this server adopts a generation 5 version controller.
NEC ESMPRO ServerAgentService	Software for monitoring the server. This works with NEC ESMPRO Manager. You can choose Service Mode or Non-Service Mode when installing this software. Service Mode resides as the OS service and Non-Service Mode does not use the OS service to reduce memory, CPU power, and other OS resources.
NEC ESMPRO Manager	Software for managing a number of servers on network.
PC for Management	A computer for managing the server on network. A general Windows/Linux computer can be used as "PC for Management".
Product Info Collection Utility	Software for collecting several hardware/software statuses and event logs. You can easily collect the data for the server maintenance by using this software.
RAID Report Service	This service monitors the RAID status and notifies failures.
RBSU	ROM-Based Setup Utility (RBSU) is a built-in utility that can configure connected devices and BIOS settings. RBSU is called from System Utilities.
RESTful Interface Tool	A tool that supports API based on Representational State Transfer (REST) architecture. You can send maintenance commands in JSON format to iLO by HTTP protocol after installing this tool.
SID	System Insight Display (SID) is an optional product that can indicate the statuses of each device on motherboard.
SPP	Standard Program Package (SPP) is a software package that includes BIOS, FW, driver, and other basic software. SPP is included in Starter Pack.
SSA	Smart Storage Administrator (SSA) is a utility that can configure RAID arrays. SSA is provided for Windows/Linux and can also start from F10 key function.
Starter Pack	A software package that includes SPP, instruction manual, application, and other software for the server. This must be installed before using OS on the server. Starter Pack is provided as an optional product and ISO data on our website.
System Maintenance Switch	A DIP switch on motherboard. This switch can enable/disable initialization, password, iLO settings, and other functions of maintenance.
System Utilities	System Utilities is a built-in utility that provides system information, calling RBSU, collecting system log, and other system utilities. You can start System Utilities by F9 key during POST.
TPM Kit	An optional product of Trusted Platform Module for the server.

5. Revision Record

Revision (Document Number)	Date Issued	Description
10.201.31-104.01	July 2020	Newly created

[MEMO]

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(3rd-Gen)
Maintenance Guide

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